THE CULTIVATOR,

A MONTHLY PUBLICATION,

DESIGNED TO

IMPROVE THE SOIL AND THE MIND.

CONDUCTED BY J. BUEL.

VOLUME II. SECOND EDITION.

ALBANY:
FROM THE STEAM PRESS OF PACKARD, VAN BENTHUYSEN & Co.
.....
1838.

☞ Some of the cuts which appeared in the first edition are omitted in this, having been lent, lost or destroyed. They are, however, of no great moment.

THE CULTIVATOR:

A MONTHLY PUBLICATION, DEVOTED TO AGRICULTURE.

ALBANY, MARCH, 1835.

THE CULTIVATOR—MARCH, 1835.

TO IMPROVE THE SOIL AND THE MIND.

In commencing the second volume of the Cultivator, and before the farming operations of the season have commenced, we are desirous of drawing the attention of our readers to some prominent objects of improvement in their farming operations. We know the distrust which farmers generally entertain to new practices in husbandry, and are fully apprized, that what we are about to offer forms already a part of the practice of many who will peruse our remarks. Yet if we should be instrumental in inducing a few, by adopting our suggestions, to improve the condition of their farms, and to render their labor more productive, our object will be effected, and we shall be satisfactorily compensated for our trouble.—All we ask is, that our recommendations may have a fair trial, sufficient merely to enable the experimentor to judge of their utility, and on a scale that shall involve neither great labor nor expense. And we shall offer nothing which we have not ourselves tested, and believe beneficial. We will begin with

MANURES,

Which are the basis of all fertility in the soil, precisely in the same way that forage, grain and roots are the basis of fatness in our farm stock. All animal and vegetable manures have once been plants, and are capable by a natural process, of being converted nto plants again. They should therefore be husbanded with care and applied with economy. Every crop taken from a field diminishes its fertility, by lessening the quantity of vegetable food in the soil. Unless, therefore, something in the form of manure is returned to the field, an annual deterioration will take place until absolute barrenness ensues. This fact needs no other illustration than is afforded by every bad managed farm. The object of the husbandman should be to INCREASE the fertility of his farm, because upon this materially depends the profits of his labor. To do this, we advise that cattle yards be made dishing, so as to collect the urine and liquids in the centre, and that these be kept well littered with straw, stalks, and the refuse vegetables of the farm, to take up and preserve these liquids, which are a valuable part of the manure:—That these yards be thoroughly cleaned in the spring, and, their contents, together with the manure from the stables and pig pen, applied to hoed crops, as corn, patatoes, beans, &c., before fermentation has progressed far;—that it be spread broadcast, ploughed in as fresh as possible, and the ground rolled or harrowed before planting. Thus *all* the manure will be saved, the hoed crop greatly benefitted by it, the weeds destroyed, and as much fertility left in the soil for the grain crop which is to follow, as the same manure would have afforded had it lain in the yard till after midsummer, and been then applied. But if manure *has* rotted, it may be applied to the turnip or small grain crop. In these cases it should not be buried deep, and may with advantage, at least on dry soils, be harrowed in with the seeds, where it serves frequently a beneficial purpose in protecting the young grain from the severity of winter.

DRAINING.

It is necessary, for the perfection of most crops, that they should enjoy all the benefit of our summer heats. When a soil is saturated with spring water, though water does not appear on the surface, the roots of the crop which grow upon it, penetrate the wet part, which may be supposed to possess a temperature never above 60 degrees. The crop consequently fails for want of the necessary heat in the soil. Decomposition of vegetable matter, the food of the crop, is also seriously retarded by this cold temperature. Stagnant waters are as unhealthy to cultivated crops as they are to animals. We have now in our mind an extensive inclined plane, which we examined last summer, of more than half a mile slope, embracing 70 or 80 acres, and possessing a rich soil, one-fifth of which was rendered unfit for tillage or the finer grasses, in consequence of springs which burst forth near the top of the plane, the waters of which passed down its whole extent, and principally in the soil, in gentle depressions or hollows. We are confident the evil here might be remedied at a slight expense, which would be remunerated in a single season, by draining.—Grounds habitually wet, either from springs, or water stagnating in the soil, for want of declivity of drains to carry it off, will not produce good crops. Draining is an effectual cure for the evil. Open drains will alone answer to carry off surface water, and in situations where much water may occasionally pass. These should hardly ever be less than 3 feet broad at surface, and two feet deep; the sides sloping so as to leave the bottom 8 to 12 inches broad. A greater depth and breadth are often requisite. Long experience has convinced us, that good drains, in the end, are always the cheapest drains, and that when they are well constructed, they constitute one of the most profitable improvements of the farm. But we consider under-drains, in soils which are habitually wet, cheaper, better and more profitable to the proprietor, either to carry off stagnant water from flat surfaces, or to arrest that proceeding from springs, than open drains. They are more efficient, because they generally lay deeper, and are not so liable to be choked up. They are more economical, because they seldom, if well made, require repairs, and do not waste any land. They are beneficial on all flat surfaces which have a retentive subsoil, and upon all slopes rendered wet by springs. They are wanted wherever water, at midsummer, rests upon the subsoil, or saturates the soil, within the reach of the roots of cultivated crops. We do not here mean to discuss the principles, or describe the mode of draining, as we have published much upon this subject, and design to publish more, with such pictoral illustrations as shall serve to render the subject perfectly familiar to the readers of the Cultivator. A very simple means of determining whether a field is likely to be benefitted by under-draining, is, in June or July, to dig a hole, like a post-hole, say two feet deep, and the presence of water at the bottom, and the height to which it rises, will at once decide whether the land is to be benefitted, and to what extent, by under-draining. Draining effectually is almost an untried experiment with us. We are not familiar with the process, and startle at the expense: yet if we compare the cost with the advantages which will accrue for a succession of years, we shall find the operation to be a very economical one.

N. B. Well drained grounds may be sown or planted ten to fifteen days earlier in spring than those which want draining, and the crops are much less liable to be injured by heavy rains.

CLOVER

Will grow on pretty much all soils that have been laid dry by good drains. It is the basis of good farming, on all lands susceptible of alternate husbandry. Its benefits are threefold: it breaks, pulverizes and ameliorates the soil by its tap roots, and it furnishes a cheap food for plants as well as animals. A good clover lay is worth to a crop, by the food which it affords, as much as five tons of manure to the acre. To ensure a good lay, at least ten pounds of seed should be sown to the acre, and the ground well rolled.—Its value, as food for plants, depends more upon the quantity of roots than upon the luxuriance of the stems, though the abundance of the latter will depend in a great measure upon the number of the former. To obtain the full value of this plant, we must cultivate it as a food for our *crops*, as well as our cattle; and in this case we should use it as such the first or second year before it has run out. There is economy in always sowing clover with small grains, though it is to be ploughed in the same or the next season. Ten pounds of seed costs upon an average one dollar—the labor of sowing is comparatively nothing. Its value to the next crop cannot be less than quadruple that sum, to say nothing of the feed it may afford, or its mechanical amelioration of the soil. We cannot avoid again urging a trial of the method of making clover hay *in cocks*, as we have heretofore recommended, notwithstanding the rebuke we have had upon this head from our esteemed friend and correspondent, Mr. Perkins. We have followed the practice twelve

or fifteen years, and hence speak from experience, and with confidence, of its manifest advantages over the common method of spreading from the swath. Put it into small cocks, with a fork, from the swath, as soon as it is freed from external moisture, or well wilted, and then leave it to cure. An hour or two exposure to the sun, previous to its being carted from the field, is all the further care it will require. This mode saves labor, prevents injury from rain, and secures the hay in the best possible condition.

INDIAN CORN.

There is no crop which habit has rendered more indispensable to the wants of our families and our farms than this. The late John Taylor, of Virginia, termed it our "meat, meal and manure."—Holding this high rank in our farm economy, it is a subject of moment to adopt the best mode of culture. As many districts are shy in producing wheat, and as this crop is seriously threatened by the new (to us) wheat insect, it becomes more a matter of solicitude to render our corn crops productive. But as this grain demands more labor in its culture than other grain crops, so it is more important on the score of profit, that it should be well managed: for if thirty bushels an acre be considered only a remuneration for the labor bestowed on the crop—all that the product falls short of this must be a loss—and all that it exceeds, a nett gain to the cultivator. The first consideration in regard to the corn crop, is to give it a dry mellow soil; the second, that this soil be rich, fat or fertile; and the third, that the seed be timely put in and the crop well taken care of. Neither wet grounds, nor stiff clays, nor poor grounds, will repay by their product, the labor required on a crop of corn. He who has no other lands but these, should not attempt to raise it as a field crop. He had better bestow his labor upon other objects, and buy his corn. We think the best preparation for corn is a clover lay, well covered with long manure from the barn-yard, well ploughed, and well harrowed. It is better to give sixty loads of dung to three acres than to ten, upon the ordinary lands of our neighborhood. The difference in product will not make up for the difference in labor. Corn can hardly be dunged too high. What we have to recommend, that is not common in the culture of this crop, is—that double the usual quantity of seed be applied—the number of plants to be reduced at the weeding—in order to ensure three or four stalks in each hill—that the roots be not broken, nor the manure thrown to the surface, by the plough, but that the harrow and cultivator be substituted for it, which will sufficiently mellow the surface and destroy weeds; and that the hills be but slightly earthed. By ploughing and hilling we conceive the manure is wasted, the roots broken and bruised, and limited in their range for food, the crop more exposed to injury from drought, and the labor increased.

If the fodder which the stalks and shucks afford is an object to the farmer, as they certainly will be when their advantages are appreciated, the securing these in good condition is a matter of importance. To effect this, as well as to secure the crop from the effects of early autumnal frosts, we recommend the practice we have long and satisfactorily followed, of cutting the crop at the ground as soon as the corn is glazed, or the surface of the kernels has become hard, and of immediately setting it up in stooks to ripen and cure. This we have always been enabled to do early in September, and once in the last week in August. The quality of the grain is not impaired, nor the quantity, in our opinion, diminished, by this mode of management, while the fodder is greatly increased, and its quality much improved. We refer the reader, for a corroboration of the correctness of our views upon this subject, to the article in to-day's Cultivator, signed Agricola, which we copy from the Baltimore Farmer and Gardener.

PRUNING FRUIT TREES.

We deprecate the old practice of trimming fruit trees in autum, winter or spring. Vegetation being then dormant, the tree can make no speedy effort to cover the wounds inflicted by the knife and saw. These wounds, exposed to searching winds, and a scorching sun, become diseases, and often bring on premature decay. Besides, an attentive observer must have noticed, that whenever pruning is performed in the spring, three shoots are ofter thrown out where one has been cut away, so that the very evil which it is intended to remedy, a redundancy of useless spray, is increased rather than diminished. If pruning is performed in summer, after the first growth, say in the first fifteen days in July, or the last seven in June, the tree then abounds in elaborated sap, the wounds are speedily healed, and amply protected, by the foliage, from the malign influence of the sun and winds. We have remarked in successive years, and the fact is noticed by others, that when a tree is pruned in summer, there are very seldom any sprouts seen to shoot from the parts where the knife and saw have been employed. If the reader will try the experiment of summer pruning upon a few trees, we have little doubt he will agree with us, that it has a decided preference over that performed in any other season. The grand error of our farmers consists in not pruning at all, or only at long intervals, when it becomes necessary to take out large limbs, and in doing this, the axe is too often employed, which mangles the trees so badly that they seldom fully recover from it. Pruning should be performed annually, while the limbs to be taken off, and the spray, are small. The operation is then trifling and safe, and the wounds speedily heal. We want no better evidence of a slovenly farmer, than to see his fruit trees so enveloped with succors as to render it doubtful which is the parent—a case which, bating a little fiction, is often witnessed by the traveller.

ROOT CULTURE.

Presents many advantages to the stock farmer. Roots are less exhausting to the soil than grain; they are admirably fitted to form a part of a course of crops; are very beneficial in pulverizing the soil; afford abundance of food for farm stock: may be substituted for grain; and serve to augment and improve the valuable product of the cattle yard. An acre of ground under good culture, will produce, on a fair average, twenty tons of Swedish turnips, mangel wurtzel, carrots, parsnips, or potatoes. Supposing a lean animal to consume one bushel a day, and a fattening animal two bushels, the produce of an acre will then subsist three lean bullocks 110 days, nearly the period of our winter, and three fatting ones 55 days. We merely assume these as reasonable data, and ask, if the result does not prove the profitableness of their culture. But we are not permitted to doubt upon this subject, if we credit the testimony of those who have tried them, and whose continuance in the culture is the best proof of their value. Roots enter largely into the system of Flemish husbandry, which has been extolled as inferior to none other, and in many parts of Great Britian, turnips are considered the basis of profitable farming. In our country, root culture is winning its way to notice and to favor. Few who have managed it judiciously have been willing to relinquish it; while others are annually commencing it. The great obstacles to the more rapid extension of the culture among us, is the want of experience, the want of proper implements, as drill barrows, cultivators, &c., and the labor of securing the crop in winter. The apparent magnitude of these obstacles is daily diminishing, and we shall ere long discover, that root crops may be cultivated, and secured for winter use, as easily as other farm crops. We have had very little experience in cultivating carrots, parsnips or mangel wurtzel as field crops; but the Swedish turnip has been a favorite crop for some years; and we can truly say, it has been one of the most sure and profitable that we have taken from our grounds.

BARON VON VOGHT'S PATTERN FARM.

We find in one of our recent foreign agricultural periodicals, the British Farmers' Magazine, some account of the successful experiments in husbandry of this distinguished German, highly worthy of notice. We give an outline of his practice, under the persuasion, that it will be found interesting and useful to the readers of the Cultivator.

In 1313, the Baron undertook to improve the condition of an estate denominated Flottbeck, as a pattern farm, and to make it an experimental farm for the north of Germany. In 1829, he had carried his improvements to so high a state of excellence, that he published for the benefit of the visitors who thronged to see him, a pamphlet, developing the principles, by the adoption of which, his soil, naturally bad, had been raised to a state of high productiveness. It is from a portion of this pamphlet, for we have not seen the whole of it, that we collate the following facts.

The soil of Flottbeck is a mixture of sand and clay. Its original depth of krume (mould) was only 3 inches; the surface was uneven, and the soil wet, water standing for a long time, and manure ineffectual on account of the consequent low temperature.—Fields could not be sown, owing to quagmires, often till June.

The winter crops were full of tares and perennial rooted weeds: summer crops abounded in wind radish and mustard, the clover with wild chamomile, sorrel, &c., and the fields with dog's grass and other noxious plants. How many of our farms now forms a counterpart to this description of Flottbeck?

The means of improving which the baron instituted to raise the condition, and increase the fertility of this farm, consisted principally in,

1. Levelling the surface, and thorough drainage.

2. Deepening the krume, or soil, at least one inch a year, till he had gained a depth of 14 inches—this depth being requisite, in his opinion, for the roots of plants to penetrate, and as a reservoir for moisture, to supply the crop in time of dry weather. To obtain this depth, trench ploughing (*rayolt*) was resorted to when necessary.

3. Increasing the fertility with the increasing depth of the soil, by ploughing in green crops, and by husbanding and judiciously applying manures—the latter applied to the potato and rape crops, and before it had become exhausted by fermentation.

4. Throwing the land into one-bout ridges in autumn (it being generally flat and rather stiff) and cleaning the intermediate furrows with a double mould-board plough. This operation enriched the soil by atmospheric influence, broke down its stubbornness, and laid it dry, so that the spring operations could be commenced two or three weeks earlier than formerly.

5. Thorough pulverization preparatory to putting in seeds, and giving these only a superficial covering of earth.

6. Graduating, by a scale which the Baron's long observation and numerous experiments had enabled him to contrive, the manure to be applied, to the precise demands of the soil and crop—thus receiving the whole benefit which it was capable of imparting, without loss by excess.

7. A judicious rotation—in which green crops often intervened. The rotation was one of six years, as the clover, which he observes forms the basis of agriculture, cannot return oftener. The intermediate crops were wheat, oats, mixed fodder, barley, rye, potatoes, vetches, rape, &c., the climate of Germany not admitting of the culture of Indian corn.

In 1829, Flottbeck exhibited a far different appearance from what it did in 1813. All the fields showed a level surface—the krume or mould had every where a depth of 14 inches. The fields rendered dry by ditches, and under water carried off by 27 under drains—no noxious plants infesting the ground, save the dog's grass when the clover happened to be frozen out—and the produce so much increased, as that the same area which, in 1813, would yield only 14 bushels rye, in 1829, was found to produce 24 bushels of wheat.

We think there is much in Baron Von Voght's practice that commends itself to the notice of our farmers. The means which he employed are within our reach, and the advantages of using them manifest. The climate of Germany is not very dissimilar to ours, save that ours is rather the most mild. That the readers of the Cultivator may understand the principles upon which the improvements at Flottbeck were based, we subjoin them in the Baron's own words.

"The few general principles adopted here, with all kinds of produce, are the fruit of thirteen years' experience, and several thousand experiments.

"1. The soil must have 11.280 to 14.100 inches of krume, in order to admit of the roots penetrating into the ground; that in wet weather, the water which in a flat soil might drown the crops, may be absorbed, and formed in the deep into a reservoir, from which the extremities of the roots may imbibe a nourishing moisture, impregnated with carbonic gas, which it draws from the manure fermen ing in the earth.*

"The krume must have a depth of 14.100 inches, in order that the exhausted surface, being buried at a greater depth, may reimbibe the lost moisture.

"This I obtained by having the land ploughed in autumn, at a depth of about 5.640 to 7.520 inches, then having it finely harrowed, and finally rayolt it with two ploughs, one behind the other, (the last with four animals;) this requires, of course, swing ploughs, as it is absolutely necessary to plough before rayoled.

"The latter operation is usually performed by oxen.

"2. In autumn, all ditches must be opened, and all the drains examined, so that the water may not be stopped in any place.

"3. All rayolt land must be laid in high furrows, by means of ploughing, always two furrows together, after the rayoled and furrowing, so as to make a water furrow at every 16.920 inches, which is deepened and cleaned by means of double struckbutt, (boards fixed to the plough;) with a clayey soil: this operation is *indispensable*.

"The advantage of this mode of treatment is, that it keeps the soil dry, and renders it capable of being cultivated three weeks sooner than other shallow land; that it avoids stiffness, and, on the contrary, the high ridges being frozen through in winter, are found very mellow in the spring. I cannot deny that in autumn this requires four kinds of ploughs, (the two last of which may certainly be considered as only half kinds of ploughs,) instead of one kind generally used on large farms. Moreover this depth of mould cannot be obtained in less than ten years, when, at the same time, the disadvantage of an inferior sub-soil can be repaired by manure, which will add about one inch of mould a year—a method quite impossible on large farms, and on small ones, attainable only by a proprietor, and never by a farmer.

"These high furrows are separated in spring with the four horse split plough; if the land is quite clean, it may, after being harrowed in the manner which will be mentioned hereafter, be immediately sown; but if it is not, it is hooked crossways.

"4. All the land which is not rayolt,—because there remains from the preceding harvest too much manure on the surface, which, *if the next crop should want it*, must not be removed too far, is, if it bears no manure crop, ploughed in autumn, first shallow, then deep, and lastly laid in high furrows. In spring, in which there is as little ploughing as possible, it is, after the splitting, according to the necessity of the crop and soil, first harrowed, and then hooked crossways, or only harrowed in the manner prescribed.

"5. It is a principal maxim to sow a green crop for ploughing in, in the rape seed stubble, as well as in the corn stubble, where no clover has been sown. In August, I use for this purpose rape seed; in the beginning of September, turnips; from the middle of September to the middle of October, rye; then there is but one ploughing in autumn, a method which I recommend, on large farms.

"The manure crop is in the spring shallowly rayolt in, and is equal in its effects to 3.914 to 5.811 loads of manure per acre.

"6. One observation which leads to the most important results, was the certain conviction, that it is the vital power of plants, which by the incomprehensible faculty of decompo-ition and assimilation, by means of their leaves and stalks, constantly imbibe an incredible quantity of substances, in the shape of gases and manures, and convert them into their own elements, rejecting what they do not want, changing what they have received into a new body, and so continuing till they have formed their blossoms; that the root, which till then keeps growing and oozing out moisture, only begins when its growth is perfected, powerfully to decompose that which surrounds it, and alone supports the fruit, whilst the leaves and stalks are fading; that the vital point of the plant has its seat exactly in the centre of the germ, from which it forces the root into the earth and the stalk upwards; that every thing depends, in the first growth of the plant, on keeping this point in health and activity; that this should be done in sowing.

"1. When the surface is as much as possible pulverized, in order that the seed-corn or potato shoot be surrounded by, or rather laid on earth finely divided, in which the fibres of the root may quickly shoot, and where air, moisture and warmth may operate with facility.

"2. When the shoot, laying on such a pulverized surface, being covered only a couple of lines, in order that light, air, warmth, dew, and other atmospheric moistures, may immediately excite the vitality in this point, and thereby promote the development of the germ and procure nourishment to the first leaf.

"I refer with regard to this, especially to the specimens of dried plants kept ready for the inspection of the visitors, which so

* Thaer mentions the following proportion of the value of the soil, with a flat and deep mould. "If," says he, "the soil, with a mould of 3 inches, is worth 28, that possessed of 5 inches of mould will be worth 50; that of 8, 62; and that of 11, 74;" and this entirely agrees with my experience at Flottbeck. Should we then hesitate to spend a few years, and some manure, thus permanently to enhance the value of our field?

strikingly show what difference there is in the vital germ lying on the surface, where roots and leaves immediately, numerously and powerfully shoot from one point, and the weakened vital germ, which, lying at a depth of 1.680 inches, shoots forth few roots, but a white thin tube, which rises as far as the surface, where the knot is formed, whence the weakened germ pushes forth a single and sickly plant.

"The result of this observation was, that we took every possible pains to give to the surface a depth of from 1.380 to 2.820 inches, the necessary state of pulverization, to divide the thickly sown seed equally upon it, and to give it as thin a covering of the pulverized soil as possible. But for this we were entirely without implements.

"The grubber, indeed, gave looseness to the surface, but did not destroy the small clods. The roller pressed the soil too firmly, and if it happened to rain, a fresh process became necessary. The usual harrow, with teeth 6.580 inchesa part, drew, even in a ground previously harrowed, lines in which the seed sown by the best sower would fall, and then stand too thickly, while a surface of 2.820 inches was left between these lines, which contained few plants, but became a nursery for weeds.

"Then it occurred to us, (after the grubbing and usual harrowing,) to pass with the iron Mecklenburgh harrow reversed, the upper side of it being flat upon the surface, till all the small clods were pressed into a powder; then I had harrows made, the teeth of which are only from 1.410 to 1.880 inches apart, and in the Flemish fashion, placed in a slanting angle. With these we passed sharply over this finely pressed soil, with the horse fastened in the middle and afterwards in one corner, after which we sowed. The corn came to lie in lines 1.410 apart, and was harrowed in crossways, with the *drag* teeth of the close harrow,* and by this means the seed was but slightly covered, and not a grain displaced.

"By this mode of cultivation it was found that every germ immediately shot forth strong roots and several stems at once; and an experience of several years has shown an increase of produce of from 20 to 30 per cent, occasioned by it, as we continued to cultivate a peice of ground next to it in the usual manner.

"7. I must further mention as the last, but not less important principle and cause of success, that each of the manured fields has been brought to that point of fertility in which it can yield the greatest produce; so that with less manure, it would not yield its full produce, and more manure would cause the crops to lie down, even if the year were not wet. The difficulty of being able to fix this point, for every field and kind of crop with certainty, was removed by the now perfected geometrical method, by which, with the help of a scale formed on twenty years' experience, the degree of productiveness may be marked, in which the field has been left in the last crop; i. e. seldom below 100 degrees, which denotes a field capable of yielding 24.02 bushels of wheat per acre, and below which it is not advisable to let a field sink."

A FEW DAYS AT HOLKHAM.

Holkham is the residence of Mr. Coke, celebrated as one of the first agriculturists of Great Britain and among the most successful breeders of Devon cattle and South Down sheep. The editor of the British Farmers' Magazine, the Rev. Mr. Berry, himself a distinguished breeder, paid a visit to this distinguished man in 1833, and from his memoranda of that visit, we have extracted the following facts, for the benefit of the readers of the Cultivator.

Mr. Coke's estate, which is very extensive, consists of a hungry sandy loam, or light gravel of the same character, with occasional interruptions of small patches of bog which with us would be called swamps. When Mr. Coke came into possession, some of these lands let at 1*s.* per acre, and subsequently at 3*s.* This same land now yields, in consequence of the superior management which has been bestowed upon it, from 70 to 80 bushels of barley, and 34 of wheat per acre.

Mr. Coke prefers the Devon cattle, as being best adapted to his light soil, and he has improved their quality in an eminent degree, by careful attention to breeding. The dairy of Devon cows is highly productive; each cow, no matter what her other excellencies, being rejected, which proves a bad milker.

* With the teeth slanting forward. They are called *drags* when the teeth slant backwards.

Mr. Coke's flock were for many years the South Downs, which he brought to a great degree of excellence, but he had recently improved his flock by crossing with the Hampshire, a more hardy breed. No breed in the island, says our Rev. narrator, now equals in profit, that of Holkham. By this cross he lost nothing in early maturity, while he gained in the constitution of his flock; increased the lean meat of the animal, a desideratum; and so improved the quality of the wool, as to render it the most valuable in the island. His shearlings of this improved flock, sold, on an average, wool and carcase, at £2 10 each, ($11.)—The fault of the old South Downs, like the Leicesters, was, that they had a tendency to run fat, and to want, in both fat and lean condition, *lean meat*, an important consideration there, as it should be here, in fine table mutton. It is an important advantage, too, which the Devon and Scotch cattle possess over the improved short horns, that the fat and lean of their beef, are better interlarded, and the meat more delicate, and consequently worth more in the market, than the beef of the latter. The desire in England, both in beef and mutton, is not to obtain the greatest quantity of fat meat, but rather, if we may use the term, the greatest quntity of *fat lean* meat. The advantages particularly resulting from Mr. Coke's cross of the Hampshire upon the South Down sheep, are stated to be, the possession of more *useful* frame—(a description comprehending much that is highly important)—a superior quantity and quality of wool and a greater product of sufficiently lean meat per acre, without a sacrifice of the early maturity of the South Down breed. A lot of the improved sheep cut one pound and a quarter each more wool, and of a better quality, than a like number of pure South Downs. Of the Hampshire South Downs here described, a lot has been imported by Mr. S. Hawes, our friend and neighbor.

Mr. Coke had growing 430 acres of Swedish turnip and mangold wurtzel, for winter feed of his extensive stock. The Swedes are sliced for the use of sheep, in a superior machine, at the rate of two bushels per minute. Under this management, 40 acres of turnips held 400 sheep three months.

On one of Mr. C.'s estates there was, a few years ago, a bog of 50 acres, impassable, in which a man was lost in attempting to cross it. It has been reclaimed, and is now a beautiful water meadow, worth three pounds, ($13 to $14,) per acre per annum rent. The fifty acres kept more than ten sheep per acre, 20 bullocks and ten horses. This affords a fair demonstration of the utility of draining and reclaiming swamps.

The writer commends Mr. Coke's management of a naturally bad soil for wheat. This crop is drilled in, on a clover lay, manured with rape dust, drilled in. The drills are nine inches apart. One machine drills eight acres per day, and the quantity of seed varies from three and a half to four, and even five bushels per acre. An essential part of the management is the rolling, which is effectually performed by heavy iron rollers.

The effect of Mr. Coke's management is illustrated by the example at Elmham Park. In 1817, he commenced improving this property, by means of draining, clearing ditches and top-dressing with the soil taken from them. In these labors, a sum of £510 15*s.* was expended, by means of which the annual value of the estate had increased from 1817 to 1827, to the amount of £500, and a progressive increase of value has, since the last named year, regularly continued.

CULTURE OF THE MULBERRY.

It seems to be a matter well established, that at least the white mulberry will do well in our state. We wish we could affirm as much of the morus multicaulis, but our experience compels us to say, that its success in the northern section of the state, is at least doubtful. The next question to be solved is, can the silk business be rendered profitable? That it can, in families who have females and children, who will gather the leaves and take care of the worms, we have no manner of doubt. The last Farmers' Register contains an interesting letter upon the subject of silk culture, translated from the French, which the restricted limits of a monthly sheet prevents our publishing in detail, as it does many other articles of interest. It is written by M. Carrier, of Aveyron, into which department the silk business has been recently introduced, to M. Bonafous, director of the royal garden at Turin, giving an account, among other things, of the product and profits

of his silk business in 1833. This is stated in the following extract:—

"I will now show you," says the writer, "the account of the sale of my silk of 1833. I shall take care to subtract the expenses, and you may see the clear profit.

29 1-5 kilograms white silk, at 63 francs the kilogram,		1,830f. 60c.
2 11-12 inferior silk, at 18 fr. the kilogram,		44 95
		1,884f. 55c.
Deduct for portage,		16 00
		1,868f. 55c.
Value of the different remains, coming from the remains of the filatures used at my house,		115 00
Sum realized,		1,983f. 55c.
For the expense of management,	171f. 75c.	
For the filature, reeling,	263 85	
		435 60
Profit,		1,548f. 95c.

"To appreciate the advantages of the cultivation of the mulberry, one must remember, that this sum 1,548 francs of profit, (after deducting all the expenses,) is the product of leaves furnished by trees which have occupied for eight years, on an average, a piece of ground, rather less than half a hectare, or at most two sétéréés, a local measure."

The kilogram is two pounds two ounces and four grains, avoirdupois; the franc is 18¾ cents; the c. (centime) one hundredth part of a franc; the half hectare is about 1¼ acres. Hence, the gross product in silk, from one and a quarter acres in mulberries, was 69½ lbs., which sold for $350·25, or about $5 the pound, and after paying all expenses, afforded to the proprietor, a nett profit in one year, of about $290·40.

We quote again from M. Carrier's letter:—"The proprietor who wishes to occupy a plantation of mulberry trees, supposing he had already at his disposal a quantity equal to those which I stripped last spring, and in the same condition, that is, producing 160 quintals of leaves, at four francs the quintal. Well, this proprietor could have obtained from half a hectare (about 1¼ acres) of ground, with no other expense than that of cultivating the trees, a revenue of 640f., or 320f. for each *sétéréé*, composed of 640 square fathoms.

"The person who would have bought this quantity of leaves to devote himself only to the raising of silk worms, would have had (as I did) 928 pounds of cocoons, and would have sold them at 1f. 50c. a pound, according to the course of that time: this sale would have produced, 1,392f. 00c.

Deduction of expenses, purchase of about 8 ounces of eggs, at 3f. the ounce,	24f. 00c.	
Expenses of all kinds for the management,	171 75	
Price of 160 quintals of leaves, at 4f.	640 00	
Rent of the room,	60 00	
	895 75	
His part of the profits for 40 days attendance,	496 25	
The filature who buys the cocoons, obtains a quantity of silk equal to mine, and sells it in the same manner,	1,868 55	
He draws from the remains,	115 00	
Total,	1,983f. 55c.	
It is necessary to deduct from this sum, as the cost of 928 pounds of cocoons, at 1f. 50c.	1,392f. 00c.	
Expenses of the filature,	263 85	
	1,655 85	
Clear gain of the winder,	327f. 70c.	

"The laborer, with a family, takes for his share the remains of this filature, employs his wife and children to prepare and wind the low and different qualities of silk, which are in much request and readily sold. These products can be valued, after having received all the suitable work, at 165f.

Deduction for the purchase of the first materials,	50f.	
Hand work, although gained by the family,	80	
	80	
Profit, without including his work, already paid,	85f.	

"A simple recapitulation will make the result better understood than this division of the labor, which division certainly agrees, in many cases, with the taste or situation of persons who neither wish, nor are able, to undertake all parts of the business.

The land owner, who sells 160 quintals of leaves, at 4f. receives,	640f. 00c.
The person who buys them, and manages the raising, gains,	496 25
The winder, who takes charge of the cocoons, winds them, and receives for his labor,	327 70
The laborer who works up the remains, does the labor for 80f. and gains besides,	85 00
Sum equal to the total profit which I have made by the union of all these operations,	1,548f. 95c.

"The calculations which I have just presented, speak loudly enough without my adding the least observation to make the evidence more sure; I will only say, one of the great benefits of this direction of industry is to make a considerable mass of work for all classes of society, and for all ages."

A plantation of mulberries may soon be obtained, by procuring the young trees from the nurseries, or by sowing the seed. An once of seed will produce from two to three thousand plants. Sow early in May, upon a bed of good earth, well pulverized, in drills a foot apart: cover with half an inch of fine mould, compress the surface slightly with a hoe, that the soil may better retain moisture and come in contact with the seeds, and if the weather is dry, water occasionally, to aid germination, and to enable the young roots to get firm hold of the earth: keep the bed free from weeds, and after one or two years, prune out the plants in nursery rows, three feet apart, and in two years more they will be fit to set out where they are to remain permanently.

ITALIAN RYE GRASS.

The following communication relates to a grass of great promise, if it will withstand our winters. The French and Scotch commend it as highly as the Germans, though it is of but recent introduction among them; and our personal observation tallies with the high character which all give it. We sowed some in Sept. 1833;—it promised remarkably well—but the winter killed it. We supplied some friends with seed, which was sown last season; it is of course not yet known what effect the winter has had upon it. The State Society have directed a quantity of seed to be provided for distribution, with the view of giving it a fair trial among us.

Description and culture of the Italian Lolch.

(Translated from the German.)

The Italian Lolch *(Lolium perenne italicum aristatum)* yields the most abundant fodder of any kind of grass that is known. Its extraordinary yield has, for several years past, extended the culture of it, in one part of Germany and Switzerland, very rapidly, and also in France some agriculturists have made experiments with it which were completely successful.

If sown in October,* its growth being very rapid, before winter sets in, it makes a thick sward equal to that on old grass land, and the first crop of hay is double to that of a common meadow. The Italian Lolch is entirely different from the English Ray grass, which latter serves only as a means of making a sward on the land for pasturage, does not grow over 2½ feet in height and gives but two ordinary crops in one season, while the former commonly grows to a height of 4 feet, on a soil more moist than dry, and gives always four abundant crops in one season, and frequently more.

The haulm is covered with leaves of a light green colour. The most proper time to sow it, is in the fall. After a crop of grain is taken off from the land, turn the stubble over, harrow it and sow the seed. And frequently it grows large enough to cut before cold weather; but it is advisable not to cut it, because it will take better root if left. Such a meadow, shows itself before winter thick and well overgrown, like an old one, and the first year's crop was, by haying time a full one. Sowing it in the spring, or month of April, requires moist weather and more seed. The plant is lasting. And at the end of the seventh or eighth year, these meadows are as vigorous as they were in the first year. If, however, light places are to

* *Note by the translator.*—The winter in those parts of Germany where the lolch is cultivated, does not set in so early as in this section of country.

be seen, they may be renovated by letting the seed get ripe, and shell out, on such places, or they may be sown with new seed.—A soil more moist than dry is generally best adapted for this plant, but it has been tried on high lands and on the Alps, where it likewise perfectly throve.

After grain or potatoes (or other hoed crop,) a shallow tillage is sufficient. After clover or lucerne a deeper tillage is necessary, but on old meadow it is advantageous to cultivate first a crop of potatoes or grain, and after these being harvested in the fall, sow the Loloch. These meadows are treated like other meadows: every three years they receive a manuring—top-dressing—and the first one is incorporated with the soil at the time of sowing the seed.—The ground ought to be well harrowed. The seed is sown broad cast—about 40 pounds to the acre. If sown in the spring, 8 to 10 lbs. more are necessary, and one chooses as much as possible, a wet time to sow it. After the seed is sown, harrowing may be dispensed with, but the ground ought to be rolled with a heavy roller. This operation has the double advantage to press the seed into the ground, and smooth the land for mowing.

H. D. GROVE.

Hosick, Rensselaer Co. N. Y., Jan. 31, 1835.

Receipt for the cure of American blight, or mealy aphis, on apple trees.—"Dilute three-quarters of an ounce measure of sulphuric acid with 7½ ounces of water, made slowly." This liquor to be applied all over the bark of the stem and branches, by means of rag-mops, taking care not to let it touch the young shoots, which it would kill, or the operator's clothes, which it will injure. This fluid kills every insect it touches.—*I. Couch, in Gardener's Mag.*

Train oil, applied with a brush, or soot and oil, laid on in the same way, or even clay and water applied like a coat of paint, are all used for destroying this destructive insect. Nor is there occasion for applying the remedy to the entire bark, as the insect is found almost entirely at the separation of the branches, or near the surface of the ground, where alone the application need be made.

How to preserve pigs in good health and in good appetite during the period of their fattening.—Mix with their food a few gall nuts, bruized with charcoal. We are unable to account how this operates so beneficially on the economy of the health of these animals, but we are wishful to make it public, as we have experienced the result to be decidedly good.—*British Farmers' Magazine.*

It is known to every farmer, that hogs, when fattening in a close pen, are liable to lose their appetite, become sick and die. There are several preventives for this evil—as occasionally mixing a little sulphur with their food, giving them charcoal, rotten wood, or permitting them to root in a small yard appended to the pen.—Some of these precautions are necessary.

Hot Beds, we are aware are very little employed by farmers: yet many would employ them, we believe, if they were aware of their advantages, and knew how to construct and manage them.—The expense is trifling. They are employed to raise early salads, early cabbage plants and cucumbers, and to bring forward plants of other garden products, as tomatoes, egg plants, flowers, &c. and which may be transplanted into the open ground as soon as the season will permit. By means of hot beds, under ordinary management, salads may be had for the table in April and May, cucumbers in May and June, and cabbage and other plants in May, or earlier if desired. There is no specific rule for making a hot bed, yet we will give such directions as will enable those who wish, to make an experiment of their use.

The first thing is to obtain, say three sashes, which are usually about 6 feet long by 3 feet four inches broad. They consist of a stout frame made of plank, with five longitudinals astragals or strips, for the glass to rest upon without any cross pieces, so that each sash will contain six strips of glass, six inches broad, which lap slightly, to throw off the rain. These are the most common form, though the size is not material. Whatever may be the size of the sash, a frame, generally made of plank, must be provided to fit two or three of them, with strips running from front to rear, for the sash to slide upon. The frame may be 14 to 18 inches on the back side, and about 7 inches less in front, so as to give the glass, when on it, a slope nearly at right angles with the rays of the meridian sun. Having thus a frame and sashes, lay down the former in the place designed for the hot bed, mark out a space extending round the frame 8 to 12 inches, and take out the earth from the enclosed space to the depth of 12 to 15 inches deep, and fill this with unfermented horse dung, separated and equally distributed with a fork, and raise the dung at least 18 inches above the surface of the ground. Put on to this the frame and the glass, and in a short time a rapid fermentation will take place. In two or three days, the dung may be covered with four to six inches of good earth, and if cucumbers are intended to be planted, a hole should be made in the manure under each sash of four or six inches, for the hills, that the depth of earth may be ten or twelve inches. Whenever the violence of the heat has sufficiently subsided, which will be in two or three days more, seeds may be planted, which will appear above ground in 24 to 48 hours. Care must be taken to raise the upper ends of the sash occasionally, to let off the heated air, and to draw them partially down, after the plants are up, when the weather is mild, and to cover the glass with a mat when it is cold, and during a meridian sunshine, to protect the plants from frost and sun. The middle of March or first of April is early enough to prepare a hot bed for plants designed to be transplanted into the open ground.

THE NEW THEORY.

We endeavored, in a late number, to show the fallacy of the new theory, which teaches, that the matter thrown off in the soil by a species of plants is poisonous to the same species, and that this is the reason why a rotation of farm crops is rendered necessary in good husbandry. We instanced the fact, in disproof of its correctness, that in our western counties, wheat was frequently grown fifteen or twenty successive years without material diminution of crop. We have since been assured of the same fact in regard to oats, in the south part of Erie and Chautauque counties. As a further corroboration of our position being correct, that the excrementitious matter of plants *is not* prejudicial to the like species, we state, from a letter before us, from a highly respectable correspondent, that in the valley of the Sciota, near the Ohio river, "many fields have been cultivated in corn for 20 or 30 years in succession." The soil of that valley is a rich alluvial deposite, possessing like fertilizing properties to the depth of 15 or 20 feet, and containing so inexhaustible a stock of the specific food of maize, that the supply has not been sensibly impaired by 20 or 30 successive crops of that grain.

The article which we publish to-day, from Professor Low, on manures, is graduated for the husbandry of North Britian, where the climate is more humid and cold than with us, and where Indian corn will not ripen. Hence the remarks relative to partially fermenting manures, previously to their being applied to the soil, lose their force in our practice. The necessity there arises from the fact, that decomposition will not take place in the soil in time to nourish the crops which they raise, on account of the cool climate. Here the fact is different, as is also the main crop to which fermented manure is principally applied. Manure upon which fermentation has not begun, will, with us, if spread broad cast, and well ploughed in while moist, invariably decompose, in a warm corn soil, in time for the wants of a corn crop. The heat of climate, too, and the present state of our husbandry, render unnecessary, or too expensive, some of the more tedious processes which are resorted to in Europe for preparing manure.

Madder.—We are authorized to say, that any gentleman disposed to embark in the culture of Madder, can be supplied with some thirty bushels of roots, in Bridgewater, Oneida county. We refer to Russell Bronson.

CORRESPONDENCE.

Canaan Centre, Feb. 14th, 1835.

Sir—In the February number of the Cultivator, I noticed an extract on wintering sheep, to which I would wish to call the attention of wool growers, and to the truth and importance of which, I can fully attest. I have long believed that the principal cause of any great mortality among sheep, arose from want of sufficient feed, and proper care. It is undoubtedly very wrong to let sheep ramble over the fields after the nutriment of the grass on which they

feed is materially injured by severe frosts. Sheds, for the shelter of sheep in winter are all important, as exposure to storms is very injurious to them, and I am of opinion, shelters built on the highest part of our pastures for flocks to flee to, in severe storms in summer, would be of great service, as they undoubtedly frequently contract diseases from exposure to long and cold rains, from which they never recover. During such exposure they contract violent colds, which finally become permanently seated on their lungs, and is, in my opinion, the cause of the loss of many sheep. This may be evident to all observing persons, (as they will notice that sheep after such rains are many of them troubled with the snuffles,) and shows the necessity of being very particular to house them during cold nights, and storms, immediately after shearing; the contrast being so great after losing their clothing, that a trifling exposure may prove fatal; and this precaution is more necessary with fine flocks than with coarse, as they are naturally more delicate, and less able to endure great changes. Water, I also consider very important for sheep in winter, and when it is practicable, should be brought into their yards, so as to be convenient to them at all times. I have four flocks that drink at one trough, and I observe, that when they are feeding at the racks, the water trough will be thronged with sheep; some of them constantly leaving their hay for water, which satisfies me that convenient access to water, adds to their comfort, and consequently to the improvement of their condition.

The above remarks, if you think them worth it, you are at liberty to publish, but my principal object in this communication is, to give to the public, the result of my experience in rearing lambs; and which I am sensible will be lost to all those that neglect their flocks, and to most of those that do not attend to them personally; as care and prompt attention to all their wants is the great secret. To insure the life and health of every lamb, bearing ewes should all be in good condition; then lambs are as likely to live as the young of other animals; but if the ewes are feeble, they will have no milk to support their lambs if they should chance to be strong and healthy. Feeble sheep are often exhausted in bringing forth their young, and consequently will take no notice of them, and strong as well as feeble ones, sometimes need help at such times, which should be done with great caution; they should never be helped except when their pains are on, and when they are trying to help themselves; and the lamb should not be taken entirely away, but left so that the sheep will have to make a little exertion after she is left, otherwise if the sheep is at all wild, she will from fear of the person helping her, make her escape and take no notice of her lamb. I am in the habit of helping every sheep in that situation which I can come at, as it undoubtedly saves them much pain and exertion. Sheep should invariably be housed nights and stormy weather during the time of dropping lambs, and I have been in the habit of housing mine nights, till I wash them, to secure them from the ravages of the foxes. Sheep should have all the facilities for procuring fresh grass that is possible to give them, before and after the time of dropping their lambs, which adds greatly to the quantity as well as quality of their milk; but turning them out on the fields without close attention, is often the cause of losing lambs, as when they are dropt on the cold ground they often become chilled, so as to be unable to get up, and in a short time will be past recovery. When I have neglected mine in that way, and found one that has any life left, I take it immediately to a warm room, and put all but its head into a pail of warm water, and then rub it with a dry cloth till it begins to struggle for life; and I have never failed of restoring such lambs the use of their limbs, though I have found them so far gone as to be unable for some time to observe any expansion of the lungs; with their limbs perfectly stiff, and their jaws almost immovably fixed. With such attention, you may have them running about in one hour, and to all appearance as strong as if nothing had happened to them; though they require a warmer atmosphere for some time than if they had not been chilled. Care should be taken not to feed them with milk, till they are sufficiently recovered, as there is danger of strangling them by the milk entering their lungs. I have had them injured in that way, which though they lived, would be a long time recovering from the effects of such treatment. Lambs will live twenty-four hours and even longer without any nourishment, and should not as a general rule be fed, till by their actions, you discover they are seeking food, and then they will in most cases drink without much trouble. Many lambs that it becomes necessary to feed, are lost for the want of sufficient food, through fear of over-feeding; but my experience teaches, that they should have all they will drink, and I let their own appetites govern. I have often had lambs of twenty-four hours old drink a pint of milk at once, and when they drink the most, feel the most assured of success in raising them. There will always in a large flock, be some that will not get milk enough. I am in the habit of making all such ones drink that I can, by taking a basin of milk and giving them my thumb to suck, so as to have a full supply once or twice a day, till the milk of the sheep increases by the growth of feed. The milk of such sheep as lose their lambs should not be lost, but kept for the support of those that have not a full supply; such sheep I manage to make own the lambs of others, so that I often have lambs that draw their living from two sheep through the season; this I do when I find the dead lamb before it is dry, by rubbing it over the lamb I wish to make the sheep own, and in that way deceive her, and make her think it hers. Where that will not answer, I skin the dead one, and sew the skin on to the live one, which generally answers the desired end; but in case of failure in both the above experiments, I tie up the sheep and fetter her in a small pen with the lamb and the other sheep, and hold her for the lamb to suck several times in a day, till she will own it. As a proof of the truth of what I have asserted, that care and prompt attention are the great secret of success, I will relate my success last year, which I am far from attributing to any good luck I have over others, as I believe that prosperity or adversity, in all such cases is the result of good or bad management, of care or neglect. Of one hundred and thirty-one lambs I had dropt last spring, I raised one hundred and twenty-six.

A few words as to future management and I have done. Lambs should always be left at home when sheep are to be washed, as they are saved much fatigue where the distance is considerable, and many accidents incident to a pen, crowded as they are at such times; besides the advantage of having the sheep go directly home without any trouble, after washing. Ticks are very injurious to sheep of all ages, but more so to lambs, as they have the trouble of them in summer; the ticks leaving the old ones for a more secure retreat on the lambs. To destroy ticks, I take 10 or 12 lbs. of tobacco stalks for one hundred lambs, (which I buy of the tobacconist for as many pence,) and at the time I shear sheep, put it into a tub sufficiently large to dip them in, and fill it with water, and let it soak six or eight days, when I get up my lambs, mark, dock, and alter them, then dip them into the tobacco juice; this not only kills the ticks, but is serviceable to the wounds made by docking and altering, and is all the remedy I ever apply to such wounds. Dipping the lambs in that way, two successive years, will destroy all the ticks in the flock.

The method of docking lambs by taking hold of the tail and cutting it off while the animal is struggling to escape, is very cruel; as it leaves the bone longer than the skin, which not only makes it very sore, but induces the flies to work at it, which endangers the life of the lamb. My method is, to have a man take up the lamb, and place the tail bottom upwards on the square edge of a block; then with a large knife, I crowd the skin which is loose up to the body, and strike the knife with a hammer, which leaves the skin longer than the bone, and consequently it closes together over the bone, and the wound heals in a short time. I alter lambs by cutting the pouch off close to the body, which leaves nothing to impede the shears, more than cording, and is attended with less trouble. Lambs that have much wool on them, should be sheared about the pouch, to prevent the blood and wool from becoming so hard as to obstruct the discharge of matter from the wound. Lambs should be weaned the last of August, and have a good chance for feed till November; then oats in the bundle two or three months, as their condition may require. I might write much more which would be useful to wool growers who are inexperienced, but I am already admonished that the length of this, may preclude its admission into your valuable paper.

J. Buel. DANIEL S. CURTIS.

LARGE SHEEP.

Attracted a few days since, by a notice in one of the daily papers, of the exhibition of some fat sheep in the rear of Bement's Hotel,

I was much gratified to find eight very superior wethers of the Leicester with a cross of the Cotswold breed. They were bred and fattened by Mr. Thomas Dunn, of this city, on his farm in the town of Guilderland, fourteen miles west of Albany.

They were purchased by Messrs. Kirkpatrick & Co., butchers in the Centre Market, at fifteen dollars per head, who deserve great credit for their exertions to procure superior meats for their stalls.

The carcases were exhibited on the 20th ult., and excited the admiration of a numerous body of spectators, for their great size and general appearance: and if their mouths did not water for a cut from one of their saddles, accompanied with a little currant jelly, then I *must say*, they were destitute of *good taste*.

In addition to the mutton, were exhibited at the same stall, the beef of a very superior steer, and a calf six weeks old.

Their nett weight averaged, when dressed, 35 lbs. per quarter; or 140 lbs. per animal. Wool on an average, say 8 lbs. It must be remarked, however, that these were the *refuse* lambs, which he declined to sell for breeders. The pelts sold for $2.50 each.

They were fed by Mr. Kirby, Mr. Dunn's shepherd, since last October, on corn and oats.

To the late Christopher Dunn, Esq. we are indebted for this very valuable race of sheep. About twenty-five years ago he procured some ewes and a buck from a Mr. Lax of Long Island, (who smuggled some of the Bakewell breed over from England,) and commenced the foundation of his flock. During the late war, some very superior Leicester sheep, destined for Canada, were captured by one of our privateers, and sent into New-York and there sold at auction. Our zealous and spirited citizen, repaired thence and procured one of the bucks, at a very high figure. Since then additions of superior bucks, by importations and selections from other flocks in this country, have been made, and none with more advantage, than the celebrated Dishly buck, owned by Charles H. Hall, Esq. of Harlaem. From this buck some of his finest specimens have originated. But his last cross of the Cotswold, has given more size and strength of constitution, with at least one quarter more wool. His Cotswold buck was imported in 1832, and is, perhaps, the largest sheep in this country—weighing alive, at least 250 lbs.—and giving at one shearing 15½ lbs. of wool, 14 inches long!

Mr. Dunn's flock consists now of about 150 head, old and young, from which he supplies, in part, the great demand made every fall—selling his ewes from $12 to 15, and bucks from $30 to 50 each.

From the above stock has originated the flocks of Mr. Bullock of Bethlehem—Wilkinson, Duane and North, of Duanesburgh, &c.

I should be doing great injustice to Mr. H. Y. Webb, were I to omit to notice his well filled stalls of very superior beef and mutton. My attention was particularly attracted by three very superior wethers, two years old, bred and fattened on ruta-baga turnips, by S. Hawes. It was the first exhibition, in our market, of the Hampshire Downs, imported by Mr. H. about 3 years since. Their carcasses would nett about 124 lbs. each. The mutton of this breed is considered of very superior quality. B.

Elements of Practical Agriculture,

By David Low, Professor of Agriculture, &c.

DRAINING.

Principles to be ever kept in mind by the tillage-farmer are to keep his land dry, rich and clean. The first in the order of these principles, and an essential one to be regarded in cold and humid countries, is to keep the land dry.

While a certain portion of water is essential to vegetation, an excess of it may prove greatly injurious. In the colder countries an excess of water is one of the main causes of infertility, and a primary object of the husbandman there is to carry it away from the ground.

The water which falls from the atmosphere does not sink to an indefinite depth or to a great depth in the earth. It is easier retained at or near the surface where it falls, and whence it is evaporated, or it finds its way to a lower level, by channels upon the surface, or in chinks of rocks, or beds of gravel, sand, and other permeable substances beneath the surface.

The purpose in draining is, when water stagnates at or near the surface, or when, having penetrated to pervious substances below the surface, it is finding its way to a lower level, to confine it to a determinate channel, and to carry it away by some conveient outlet, in order that it may not overflow or saturate the soil.

The substances through which water finds its way with facility are the looser earths, sands, and gravels, the crevices of rocks, and beds of loose or decomposing stones: the substances which resist its progress are clays and the harder rocks.

When the soil rests on a retentive sub-soil, whether of clay or pervious rock, it forms a species of reservoir for water, absorbing and retaining it. The object of the drainer in such a case is to give egress to the water in fixed channels or drains. This is partly effected by the common ditches of the farm, partly by the open furrows of ridges already described; and, when these are insufficient, by cutting trenches in the hollows, or where best suited to effect the purpose. These trenches are either left open, or they are filled to a certain depth with small stones or other substances, through which the water may percolate; and then they are covered again with earth and soil, so that the plough may pass over them in tillage.

When water overspreads the surface, or is absorbed by the soil, and is unable to penetrate to the looser strata below, the carrying it away in channels is termed *surface-draining*. When it has already penetrated into the earth, and is contained in reservoirs there, or is finding its way to a lower level through permeable substances below the surface, the confining it to a fixed channel is generally termed *under-draining*. These two purposes of the drainer are constantly combined in practice, but yet they are in some degree distinct. It is the intercepting of water below the surface that constitutes the most difficult part of draining, and which requires the application of principles which it is not necessary to apply in the case of surface draining.

If we shall penetrate a little way into the looser portion of the earth, we shall generally find minute stratification, consisting of gravel, sand, or clay, of different degrees of density. These strata are frequently horizontal, frequently they follow nearly the inclination of the surface and frequently they are broken and irregular. Sometimes the stratum is very thin, as a few inches in thickness, and sometimes it is several feet thick: and sometimes the traces of stratification disappear, and we find only, to a great depth, a large mass of clay or other homogenous substances.

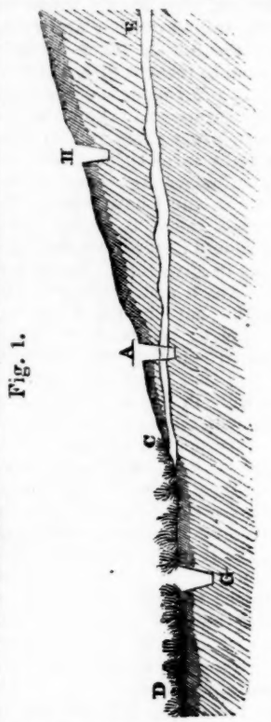


Fig. 1.

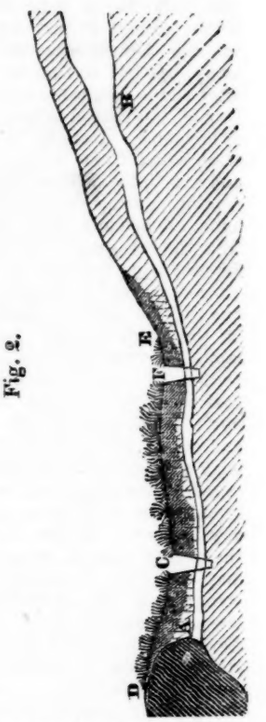


Fig. 2.

When these substances are of a clayey nature, water finds its way through them with difficulty; when they are of a looser tex-

ture, water percolates through them freely. These, accordingly, form the natural conduits or channels for the water which is below the surface, when finding its way from a higher to a lower level.

When any bed or stratum of this kind, in which water is percolating, crops out to the surface, the water which it contains will flow out and form a burst or spring, oozing over and saturating the ground, as in the foregoing figure 1, which represents a section of the ground, from C to D.

When water is, in like manner, percolating through one of these pervious strata, and meets any obstruction, as a rock or bed of clay at A, Fig. 2, it is stopped in its progress and, by the pressure of the water from a higher source, it is forced upwards, and thus saturates the superjacent soil, as from D to E, forming springs, or a general oozing.

In either of these cases, and they are the most frequent that occur in practice, the object of the drainer is to reach the water in its subterraneous channel before it shall arrive at the surface, and to carry it away in a drain.

By cutting a drain at A, Fig. 1, the water of the stratum of sand CE, is cut off before it reaches the surface at C, where it forms the swamp CD.

In like manner, in Fig. 2, by forming a drain at C or F, the water is cut off in its channel AB, and thus, in relieving the pressure from the higher source, by giving egress to the water through the drain, the cause of the wetness from E to D is removed.

In looking at the sloping surface of any tract of ground, as a field, in which there is an oozing or bursting out of water, we shall generally distinguish the line where the wetness begins to appear on the surface, extending over a considerable space, *x x x x x*, Fig. 3,

Fig. 3.

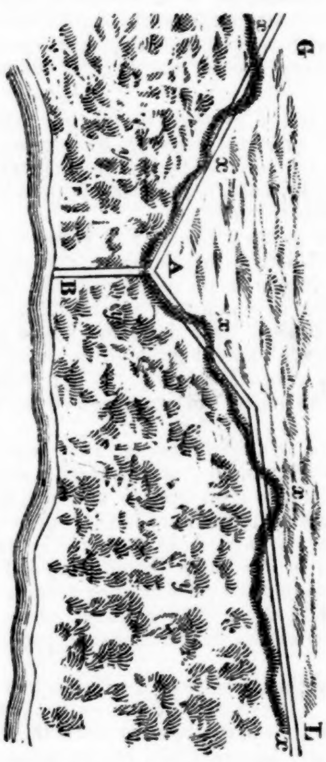
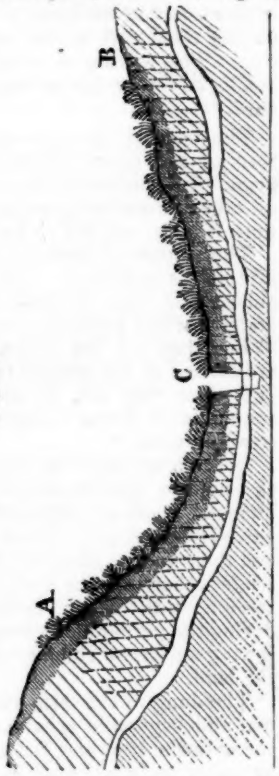


Fig. 4.



the effects appearing in the wetness of the ground farther down the slope, as *y y y*. The line where the wetness begins, and which is generally rendered perceptible by the change of color of the soil, the tendency to produce subaquatic plants, and other indications of wetness, marks for the most part nearly the course which the line of the drain should follow. By cutting a drain nearly in this line, as from G to A, and from L to A, sufficiently deep to reach the porous stratum in which the water percolates, we shall intercept it before it reaches the surface, and by carrying it away in some convenient outlet, AB, remove the cause of wetness.

This accordingly forms, in the greater number of cases, the rule adopted in practice for the laying out of drains upon the surface, the line is drawn nearly at or a little above, the line of wetness, or, to use the common expression, between the wet and the dry.

Should the line of drain be drawn too much below the line of wetness, as at G, Fig. 1, then the trench would fail to intercept the water; and further, if it were filled with earth, stones and other substances, in the way to be afterwards described, the whole, or a part, of the water would pass over it, and the injury be unremoved.

Again, should the line be too much above the line of wetness, as at H, the drain would fail to reach the channel of the water, and so would be useless.

It is for this reason that, in common practice, the rule is, to draw the line of the drain nearly between the wet and the dry, or a little above it, taking care to give it the necessary descent, and to form it of sufficient depth to reach the pervious bed or stratum in which the water is contained.

But as water may arrive at the surface in different ways, and the wetness be produced by different causes, so variations from this rule of lining out the drain may be required, and the judgment of the drainer is to be shown in adapting the course of his drain to the change of circumstances.

Sometimes, in a hollow piece of ground, feeders may reach the descent, as in Fig. 4; and the water may be forced upwards by the pressure from each side of the hollow, and thus form the swamp from A to B. It may not be necessary here to cut a trench on each side along the line of wetness at A and B; a single trench C, cut in the hollow, and giving egress to the water, may relieve the pressure and remove the swamp.

Sometimes upon a sloping surface, one pervious stratum, in which water percolates, may produce more than one line of springs, as B and A, in figure 5. Here a single drain cut at B will remove the cause of wetness at both swamps, without the necessity of the drain at A.

And, in practice, it is well to wait to mark the effect of a drain cut in the higher part of the slope to be drained, for these effects often extend further than might be anticipated, removing springs, bursts, or oozings, at a great distance.

Fig. 5.

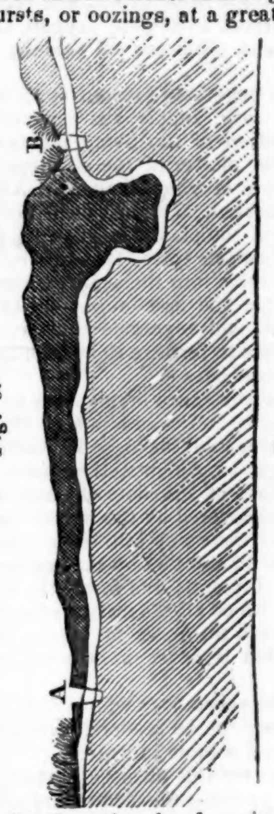
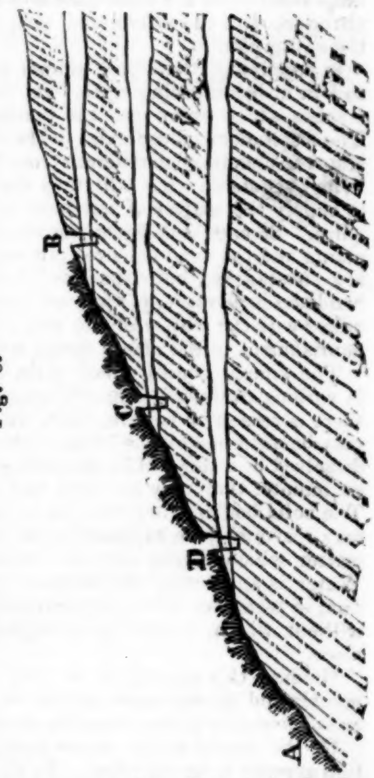


Fig. 6.



On the other hand, a single swamp, as from B to A, in the fig. 6, may be produced, and yet one drain at B may be insufficient to remove it. In this case, the water being brought to the surfaceb more than one channel, it is necessary to form several drains to reach the several beds in which the water is contained, as at B, C, and D.

These examples will show, that one rule, with respect to the laying out of drains, is not applicable to all cases, but that the drainer should adapt his remedy as much as possible to the cause of injury. One object, however, to be aimed at in all cases of underdraining, is to reach the bed, channel, or reservoir, in which the water is contained.

MANURES.

All substances which, when mixed with the matter of the soil tend to fertilize it, are, in common language, termed manures.

Manures may be composed of animal or vegetable substances; or they may consist of mineral matter; or they may be partly derived from mineral and partly from animal and vegetable substances. They may therefore be classed, according to their origin, into—

1. Animal and vegetable manures,
2. Mineral manures,
3. Mixed manures.

In describing this class of substances, it is not my design to treat of their chemical mode of action. This investigation forms one of the most interesting parts of the chemistry of agriculture; but it is not essential to that practical knowledge of the subject which will suffice for the common purposes of the farmer. The remarks to be made, therefore, on the mode of action of these bodies, will be of a very general nature.

1st. *Animal and vegetable manures.*—Chemical analysis shews us, that all plants, and all the products of plants, are resolvable into a small number of simple bodies, in various states of combination. These bodies are—carbon, hydrogen, oxygen, and, in smaller quantity, nitrogen or azote. These form the essential constituents of all vegetable substances. But there are likewise formed in plants, though in comparatively minute quantity, certain other bodies, consisting chiefly of the four earths, silica, alumine, lime, and magnesia, of the oxide of iron, and of the alkalies, soda and potassa, but chiefly the alkali potassa.

Now, all these bodies, or the elements of all these bodies, exist in animal and vegetable manures; for these being animal and vegetable substances are resolvable into carbon, hydrogen, oxygen, and nitrogen, with the intermixed earthy and other bodies, existing in the living plants.

In supplying, therefore, animal and vegetable substances to the soil in a decomposing state, we, in truth, supply the same substances which enter into the composition of the living plants.—The substances indeed exist in the dead matter of the manures, in states of combination different from those in which they exist in the living vegetable: but still they are present, and must be believed to supply the matter of nutrition which the plants in growing require. Science has made known to us the truth, that the living plants and the dead manures are resolvable into the same elementary substances; but experience has not the less taught the husbandman in every age, that all animal and vegetable substances, mixed with the matter of the soil, tended to fertilize it, by affording nourishment to the plants which it produced.

The simple bodies which form the substance of manures exist in various states of combination, and often in the solid state. Now, there is reason to believe, that, in order that these solid matters may be absorbed by the roots of the growing plants, they must be dissolved in water. The absorbing pores of the roots of plants are so minute, that they are only to be discovered by the microscope. The solid bodies, therefore, which find their way into these pores, may reasonably be supposed to be held in solution by that aqueous matter which enters into the roots of plants, and forms the sap. Water is apparently the medium by which all the matter of nutrition, in whatever form, is conveyed into the roots of plants, and without which, accordingly, vegetation is never known to take place.

Holding this opinion to be just, the substances which form vegetable and animal manures, before they can be rendered available, as nutriment to plants, must be rendered soluble in water.

Of the means which nature employs for this purpose, fermentation appears to be the chief. By this process, the elementary parts of the substance fermented assume new forms of combination, and become fitted to supply the matter of nutrition to plants in that form in which it can be received, by the pores of the roots. The fermentative process is completed after the substance to be used as a manure is mixed with the matter of the soil; but it is common also to cause it to undergo a certain degree of fermentation before it is mixed with the earth. This is the method of preparing this class of manures for use, which is employed in the practice of the farmer.

Animal matters decompose with facility when acted upon by moisture and the air, the greater proportion of their elementary parts making their escape in various forms of gaseous combination, and leaving the earths, alkalies, and carbonaceous matter, remaining.

When this decomposition takes place beneath the surface of the ground, these gaseous compounds, as well as the carbon, (which there is reason to believe assumes also the gaseous state by combining with oxygen,) may be supposed to be partially or wholly retained in the earth to afford the matter of nutrition to the plants.

Purely animal substances, therefore, which thus readily decompose, do not absolutely require fermentation before they are mixed with the soil. Yet even in the case of purely animal substances, certain beneficial consequences result from subjecting them to a previous state of fermentation. Thus the urine of animals, when applied in its recent state to the soil, is not found to act so beneficially as a manure, as when a certain degree of previous fermentation has been produced.

And there is another purpose promoted by causing even pure animal matter to undergo fermentation, and this is, that, being mixed with vegetable matter it promotes the more speedy decomposition of vegetable fibre.

Vegetable fibre is, under certain circumstances, a slowly decomposing substance. When vegetables are green and full of juices, they readily ferment; but when the stems are dried, as in the case of straw and other litter, they decompose with slowness, and the mixing them with animal matter hastens the putrefactive fermentation. This mixing of animal with vegetable matter is the process employed for preparing the greater part of the dung of the farm-yard.

The dung of the farm-yard is the produce of the hay, straw, turnips, and other substances used as forage or litter upon the farm. It is collected into one or more yards, and fresh litter and all other refuse being added to the mass, it gradually accumulates, until it is carried out to the fields for use.

The manner of feeding cattle in their houses and yards will be afterwards explained. It is sufficient with relation to the present subject, to observe, that the larger cattle may either be fed in stalls in close houses, or in yards in which they receive their food. When they are fed in close houses, their dung and soiled litter are carried to the heap in the yard, where it gradually accumulates, and when they are fed in the yards, then dung, in like manner, accumulates there, being in the mean time compressed by their treading upon it.

In the practice of the farm, to be afterwards especially described as suited to the circumstances of this country, the larger cattle of different kinds are brought home to their houses and respective yards before winter. Some are kept in their stalls in close houses, and their dung and soiled litter are carried out daily to the yards, whilst others receive their food in the yards themselves, and thus tread upon the heap. In this manner the mass of dung accumulates during the period of feeding, and at the proper period, in the following spring or summer is carried out to the fields and applied to the land.

The dung of the farm-yard is thus sure to be a collection of animal and vegetable substances. It consists of the excrements of the animals kept and fed upon the farm, together with the straw or other materials used as litter, and generally of the refuse and offal produced about the homestead. This mixed mass is collected during the period of feeding, when it undergoes a certain degree of fermentation. When trodden by the feet of the animals kept in the yards, the effect is to exclude the external air, and to prevent the fermentative process from proceeding with that rapidity which would take place were the mass not compressed.

The principal animal substances which are mixed with the ligneous fibres of the litter, and which cause it to undergo decomposition, are the dung and urine of the animals.

The properties of this dung, to a certain extent, depend upon the kind of animals, and the nature of their food. The dung of horses is easily fermented, and is more readily decomposable in proportion

to the succulence and nutritive qualities of the food consumed.—This also holds with respect to the dung of oxen. When the animals are fed on straw and the dried stems of plants, the dung is less rich and decomposable than when they are fed on turnips, oil cake and other nourishing food; and the same thing holds with respect to the dung of the hog and other animals. The dung of the different feeding animals is mixed in greater or less proportion with their litter, and the greater the proportion of the animal to the vegetable matter, the more readily will it ferment and decompose.

The urine of the animals,again, is in itself a very rich manure, and contains, in certain states of combinations all the elements which enter into the composition of plants. It is necessarily mixed with, and partly absorbed by, the litter and other substances in the yards, of which it hastens, in a material degree, the fermentation.

The urine however, is apt either to make its escape by flowing out of the yards, or to be imperfectly mingled with the litter. It becomes, therefore, a part of the management of the farm-yard, to provide against either of these contingencies.

The farm-yard should be made level at the bottom and paved if the sub-soil be loose and sandy, and the bottom should be sunk somewhat below the surface of the ground. As a portion of the liquid will flow from the stables and feeding houses, gutters of stone should be made to convey the liquid from these into tanks or other reservoirs adjacent to the yards. The same means are to be taken for conveying away any excess of liquid from the yards themselves. This is not done for the purpose of draining the yards of moisture, which would be an error, but for the purpose of preventing any excess of liquid from being lost. The principal cause which produces a great flow of liquid from the yards is an excess of rain, which, falling upon the heap faster than it can be absorbed, washes away the urine.

Three methods may be adopted for the management of the liquid which is obtained from the feeding houses, or which oozes or is washed off from the mass in the yards.

1. It may be pumped from the tank or reservoir into which it had flowed, conveyed back to the farm-yard, and spread over the surface of the heap. In this manner it will be imbibed by the litter, and tend to hasten the decomposition of the mass.

2. It may be pumped up when convenient, and conveyed in barrels to the field, and spread over the surface, a species of manuring which, under certain circumstances, is exceedingly efficacious.

3. In the bottom of the tank or reservoir to which the liquid is conveyed, may be placed absorbent earths, stems of plants and other matters. These being saturated, will become very rich manure, and may either be carried from the tank to the field, and applied to the ground, or put into heaps or composts, until the period of using them shall arrive.

This method of collecting the excess of the liquid from feeding houses, and yards, is perhaps the best in the common practice of the farms in this country. In Flanders, where extreme care is bestowed in the collection and preparation of liquid manures, there is a smaller proportion of straw and hay produced on farms, than in the mixed system of agriculture of Britain. There is not, therefore, so great a proportion of ligneous fibre to be decomposed.—The Flemings, accordingly, pursue the mode of managing their manure, which the circumstances peculiar to their agriculture render expedient. They can always ferment sufficiently the fibrous matter of the heap of their farm-yards, and therefore they have always a spare supply of liquid in a separate state. But in this country, where we aim on producing a large quantity of hay and cereal grasses, we require nearly all the liquid from the feeding animals, to moisten and ferment the general mass of the farm-yard.

When the animals of the farm are fed on tolerably rich and succulent food, and when the proportion of straw is not too large, there is no difficulty in fermenting the mass of the farm-yard to the degree required; but when the quantity of straw is very large in proportion to the more moist and succulent food consumed, as sometimes occurs in the case of clay land farms in certain districts, then there may be considerable difficulty in getting the straw sufficiently fermented and decomposed for use. This may arise from want of moisture, as well as from a deficiency of animal matter; and as we may not at the time have the power of supplying the latter, we must endeavor to keep the heap moist by soaking it, in the absence of rain, with water. But the permanent remedy for this evil is to increase the quantity of such nourishing food as the farm will produce,—namely, cabbages, tares, clovers, and other succulent and nutritive plants.

Sometimes, even when there is no extraordinary excess of dry litter, the fermentation of the heap in the yard after proceeding to a certain degree, suddenly stops, by which the manure is much injured. This action is termed *fire-fanging*. It arises from the want of moisture, and when it happens it is often very difficult to renew the fermentation. The best remedy is to turn over the heap, soak it with water, and mix it with horse dung, or any animal offal that can be obtained.

With these exceptions, the management of the farm-yard is not attended with any difficulty. We have seen that the mass consists of a collection of the excrements of the animals kept upon the farm, of the straw and other substances employed for litter, and generally of any refuse or offal produced at the homestead; and that this mixed substance is accumulated chiefly during the months of winter, undergoing during this period a certain degree of fermentation and decomposition in the yard where it lies.

The substance thus collected and partially fermented, is to be applied to the grounds during the months of spring, summer, or autumn, immediately following the winter in which it has been prepared. It should be always applied as soon after it is prepared as possible, there being a waste either in retaining it too long, or in causing it to undergo a greater degree of fermention than is required.

In the process of the putrefactive fermentation, the elements of the body fermented, in assuming their new forms of combination, partly make their escape in the gaseous state. In the fermentation of manures the decomposition may proceed so far that the great mass of the substance shall be exhaled, leaving behind only the earthy and alkaline, and a portion of the carbonaceous matter of which it is composed. In the treatment of this class of substances, therefore, the putrefactive fermentation should neither be continued longer, nor carried to a greater degree than is necessary for the purposes intended.

In practice, our object is to produce certain kinds of crops; and certain kinds of plants, it is found, require a greater action of manures at particular stages of their growth than others. Thus the turnip, the carrot, and the beet, which are sown as will afterwards be seen, in the early part of summer, require that the manure applied shall be in such a state of decomposition as to act upon and nourish them in the first stages of their growth, and if this be not so, the crop may entirely fail. In these and similar cases, accordingly, a complete preparation of the farm-yard dung is an essential point of practice.

Certain plants, again, do not require the same state of decomposition of the dung. Thus the potato requires less in the first stages of its growth, than the turnip, and hence it is not necessary to subject the manure to be applied to the same degree of fermentation. The same remark applies to Indian corn.

In some cases, too, as in the process of the summer fallow, to be afterwards described, the manure is mixed with the soil some time before the seeds of the plants to be cultivated are sown. In such case the manure undergoes the necessary fermentation in the soil itself, and does not require that previous preparation which, in the case of the turnip and some plants, is required.

But where no necessity exists for fermenting the matter of the farm-yard beyond the degree requisite for the special purpose intended, it is always a point of good practice to ferment it to that degree. In order to know when dung is sufficiently fermented for the particular use required, a very little practice and observation will suffice. When it is fully fermented, the long stems of straw which formerly matted it together, are in such a state of decomposition, that the parts can be readily separated by a fork. It is not necessary in any case that it be in that extreme state of decay in which we often see it used by gardeners, and when it can be cut with a spade like soft earth. Whenever farm-yard dung has been fermented to this degree, it has been kept beyond the proper time, and the management has been bad.

The mass, we have seen, is collected chiefly during the months of winter, and will always be ready to be applied to the ground in the spring, summer, or autumn immediately ensuing; and there is

no case in which it is advisable to keep it beyond the year in which it has been collected.

The common and convenient practice, is to carry it out from the yards where it has been collected, to the field where it is to be used, and there to pile it up in one or more large heaps, so that it may undergo the further decomposition required, before being applied to the land.

When, accordingly, after the dead of winter, as towards the end of December, and during hard frosts and snows, the men and working cattle upon the farm cannot be otherwise employed, we may begin to carry out the dung to the fields where it is to be used. It is carried out in the carriages of the farm, into which it is lifted by large forks to be afterwards described. This partial carrying out of the dung from the yard proceeds when occasion offers, or when the state of the weather prevents the other labors of the farm from being carried on. And when the feeding cattle are finally removed from the houses and yards, and turned out to pasture, which, in the north of England, is generally by the middle of May, the whole remaining dung may either be carried to the fields, or remain in the yards till required for use.

The dung, as it is carried out to the fields, is to be laid in the large heaps, which may be about four and a half feet high, and of such other dimensions as may be convenient. When the dung is placed in these heaps, it is in a state very favorable to further fermentation; for it is to be observed, that in all cases, the turning over of the dung, so as to give access to the air, causes an increase of fermentation, and this is the method adopted by farmers and gardeners, when they want to give a greater degree of fermentation to any heap. Should the dung in these large heaps not ferment to the degree required, they are to be turned over, and formed into new heaps, the upper part being placed below, and what was before below at the top. By this means the fermentative process will be renewed: and should this turning not be found sufficient, the heaps must be again turned over, so that they may be brought to the degree of decomposition required. The large heaps of this kind should not be placed in a very exposed situation, so as to be too much acted upon by the winds, and it is often a good precaution, and a necessary one in very warm countries, to face up the sides with a little earth or turf and to strew some earth upon the top so as to prevent the escape of decomposing matter. When it is wished to hasten the putrefactive process in these heaps, it is better that they be not compressed by the carriages going upon them to unload; but where there is no peculiar necessity for hastening the putrefactive process, the carriages and beasts of draft can go upon the heap without injury. When peculiar care is required, as when the dung has been injured by fire-fanging, or otherwise imperfectly fermented in the yards, it should be spread over the heap in layers, so that one layer may undergo a slight fermentation before it is compressed by that which is to be placed above it.

Sometimes the mass may be turned over in the yards where it lies, and allowed to ferment before it is carried out to the fields for use. In this case the workmen begin at one side of the heap and with large forks, turn it over, laying that which was before uppermost underneath, so as that the whole may be reversed. If after this process of turning, no treading of cattle is allowed, the fermentation of the mass will proceed with rapidity, and then the whole may be led out at once from the yards to the fields for use.

When the dung produced is very rich and well decomposed, as when cattle have been feeding in stalls on juicy and nutritive food, it may not appear to require this turning over to fit it for use; yet even in such a case it is generally beneficial that it be turned over at least once before being used, the effect being to ferment the mass not only sufficiently, but equally, and to mix its different parts together. It may be observed also, that when the mass of vegetable and animal substances is thrown into a common yard, some care should be bestowed in spreading it equally, so that one part of the yard may not be filled with rich dung, and another with poor. The dung of horses, for example, is more susceptible of quick fermentation than that of oxen. When the stable, therefore, opens upon a common yard, the horse dung should not be suffered to accumulate in a mass about the stable door, but spread abroad upon the heap.

Farm-yard dung is chiefly applied to the soil, by being spread upon the land when in tillage, and covered by the plough. The periods at which this is done, and the manner of doing it, will be afterwards pointed out. By being covered by the earth, the dung soon passes through its course of fermentation, and becomes decomposed and mixed with the matter of the soil.

This valuable substance must be economized in the manner of applying it. The soil must be kept as rich as the means at the farmer's hands will allow; but it is an error in practice to saturate it at one time with manures, and to withhold them at another.—They ought rather to be applied in limited quantity, and frequently, so as to maintain a uniform or increasing fertility in the soil.

The produce of the farm-yard will necessarily afford the chief part of the manure consumed upon farms which do not possess extraneous sources of supply. But besides the produce of the farm-yard, there are certain vegetable and animal substances which in their separate states may be applied to the manuring of land. An example of the application of vegetable substances, in this state, is where certain plants are allowed to come in flower, and are then ploughed down in their green state, and mixed with the matter of the soil. This is a practice derived from very ancient times, and is yet followed in Italy, and other parts of Europe.

Vegetable matter, when thus covered by the soil in its green and succulent state, readily undergoes decomposition, and forms a very enriching substance. The practice, however, is chiefly suited to the warmer countries where vegetation is very rapid, and even then it argues a somewhat low state of the art, and is not the best way for producing decomposing matter for manures. When we are able to raise green food of any kind, it is better that we apply it in the first place to the feeding of animals, for then it not only yields manure, but performs another and not less important purpose.

When, however, the practice is for any reason adopted, the period at which the plants should be ploughed down is just when they are coming in flower, for then they contain the largest quantity of readily soluble matter, and have the least exhausted the nutritive substance of the soil. The plants employed for this purpose by the ancients were chiefly the leguminous, as the Lupine, which is still used in Italy for the same purpose. Buckwheat is also employed, and appears to be the plant best suited for the practice in northern countries, for it is easily cultivated, and soon arrives at the necessary maturity. For the same reason, Spurry has also been cultivated for this purpose: nay, the clovers have been thus employed at the suggestion of speculative writers even in England, and thus the error has been committed of employing a valuable article as a manure, which might have been employed in the first place in supporting live stock of the farm.

The leaves of trees also form a vegetable manure, though not a good one: for although leaves enrich to a certain degree, the surface upon which they fall and decay, they will rarely pay the expense of collecting them expressly for manuring land.

The roots of plants disengaged from the soil in the process of tilling and cleaning it, are also employed as a vegetable manure. Some of these, however, as the couch grass, being very vivacious, would readily spring again: and therefore it is necessary that their vegetative powers be destroyed, which may be done by mixing them with lime, and forming in this way a compost. Many farmers, however, to save time or to prevent the risk of the plants springing again, burn them in little heaps upon the ground at the time of their being collected, and spread the ashes upon the surface. This may be sometimes convenient, but the effect is, that the principal nutritive part of the plant is dissipated, and nothing left but the carbonaceous, earthy, and other insoluble matter.

Tillage Husbandry.

[*From the Farmer and Gardener.*]

CORNSTALK FODDER.

In some late numbers of your "Farmer and Gardener," I read with much pleasure a detail of the management of the CORNSTALK as a food for cattle, &c. First induced to turn my attention to this subject by the different communications to be found in the "Farmer," for some years back, I began in 1830 to test the value of the refuse of corn, when subjected to the process of steaming. I was not long inventing a strong, rough apparatus for my purpose, which succeeded well, and in which I prepared about twenty bushels at once. Previous to this, I had, however, fallen on a plan of saving

my corn and stalks, &c. somewhat different from my neighbors; but in a way that the columns of your valuable paper had been long laboring to persuade the corn planters of the country to try fairly, viz: *to cut down the stalk at the ground*, at a certain stage of maturity, and at one effort to cure corn, stalks, blades, &c. in the field. I had seen this first practised on the south branch of the Potomac, as far back as 1812: and about 1817, I determined to try the process in this section of the Union, not being able to discover any solid reason why it should not succeed as well here as on the south branch of the Potomac, or elsewhere; but indeed compelled to believe, from a recollection of the climate I was in, that it must succeed here much better. In 1817, I tried six acres—cut it down at the ground, about a week after the *blades* were ready for stripping. I found a little shrinkage in the grain, but I felt satisfied, that as my corn was not like Pindar's razor, "*made to sell*," but to eat, that what was lost by the shrinkage was no part of the *nutritive principle;* and I did not despair of getting over that difficulty, by further trial, and by improving the mode of proceeding.

The following year I cut down *five acres*. I began the *saving* of this field of corn by going through it, as soon as a few of the under blades appeared ready to pull, and gathered and brought them home, throwing them in an old out-house to cure, and which, by a little turning over, I readily effected. I will remark here, that this *five acres* was a piece of corn on which I was trying the effect of rotten cotton seed as a manure, by planting four stalks in the hill, on light land, at the distance of *five feet* by *four*. On this field I had determined also to try the full effect of an economical management, in saving the result of labor bestowed on the earth—"Save all" was my motto, and I literally saved every blade.

Before my corn required a *second* pulling of blades, I found the *shuck* on the *ear* in that state, which authorized, I believed, the next step and the principal one I had in view, the new mode of saving the balance by one "*coup de main*." The result of observation and reflection induced this determination, viz: that in the saving process, the mode of stacking the corn stalks that would permit them to cure the most *gradually*, would certainly admit the least loss by shrinkage, from evaporation, &c.* To effect this, I selected four strong, careful hands, to cut and lay down, taking *eight* rows at a through. On getting to the end of the rows, they turned round, and gathered together *sixteen hills*, each bringing to one who attended the stacking. As each man placed his armful on the ground, the butt ends were pressed by him as far *into the earth* as possible throwing the tops together, so that when the sixteen hills were brought together at the tops the mass presented a sugar-loaf appearance, spread well at the bottom, to admit the entrance of air—tying at the top with a bandage of crab grass found among the corn, and twisted into a small rope in a few minutes. In this way I cut and stacked my field. On the 10th day I found by an examination of the inside of the stacks, that the whole was cured in a way that I could not have exceeded by any other process, although the weather had been *rainy* occasionally. I hauled the whole home, and packed it away under open sheds, and in old out-houses. In this state it continued, until winter's bleak and stormy weather admonished us that in-door business was to be attended to; when all hands went to stripping "*corn* and *fodder* from *stalks*." In doing this, I observed the following order, viz: each individual threw his ear of corn, as he pulled it off, *behind* him, and *stalks* on one side, laying them down with attention to *regularity*; and the fodder on the other—as soon as he had an armful of stalks to remove, he rose and placed the *stalks* in a *pile*, casting the fodder into another depository.† All this precaution, as regarded the *stalks*, was to have them in a situation that with expedition and convenience they could be placed in the *cutting-box*, to which they were to be subjected. In one day's work, I had a prodigious pile of stalks thus stripped. The next *rainy* day I brought in my "*Eastman*," and a man and a boy soon reduced the pile to pieces, half an inch in length. Here, sir, I would just remark, what a quantity of this *labor* I got through with in a short time, by pursuing every moment systematically, and being prepared for every operation before I commenced it. It will now be readily granted, that I have saved as much of the *nutritive qualities* of the *stalk*, *shuck*, and *blade*, by my mode of curing, as was possible to effect; and also, that I had prodigiously *diminished the labor* usually bestowed in the common mode of saving *corn* and its *refuse*. At the same time that I was preparing the *stalks*, I also *shucked*, so that in cutting up the *stalks*, I cut, at the same operation, a proportion of *shuck* with *stalk*.

But the principal object was yet to begin, viz: to prepare these cut *stalks* and *shucks* in such a way as would render them the most *nutritious* and *palatable* food for cattle. To effect this I proceeded thus: I placed three *strong* hogsheads, made of cedar, *well pitched*, on the outside, on a platform, about three feet from the ground, having at the bottom a large spigot to let off their contents. Just before these, I had a large *trough* placed, at the distance of twenty feet, and well enclosed along with the hogsheads. Between the *hogsheads* and the *troughs*, I had the steam apparatus placed, all under a shed. Into these hogsheads I threw a *small quantity of boiling water*, and into the water a *portion of corn meal*, (coarse ground) just sufficient, when the cask was filled, to produce the *vinous fermentation*, as if going to distil; with a good straw mat top, for each cask. After an hour, and well stirring, I filled up with cold, soft water, and left the mass to ferment. As soon as my liquid was ready, or just as the acetous fermentation was about to commence, I worked off in my steaming-box a turn of the *stalks* and *shucks*, mixed up, and as soon as sufficiently steamed, I placed a quantity in my trough, *pressing them well down*, with a *false* top, moveable as I wanted, and now drawing the spigot from the cask *ready*, the liquid was permitted to *cover them*, running along a portable, light trough, such as distillers use for conveying water. This I did in the evening, and by morning I took up in light buckets the quantity required for the morning's feeding of my oxen and cows, &c. placing it in the *feeding troughs*, stepping only a *few feet*, sprinkling a little salt over the mass. The cut *stalks* and *shucks* had become perfectly charged by absorption with the *liquid*, at once one of the most *palatable* and *nutritious* preparations yet discovered—of this food I gave them plenty. The effect on the *flesh* and *milk*, exceeded my most sanguine expectations. My cattle became excessively fond of it, and I so fed as to "lose nothing."

My casks by a little *management*, I had always "*under way*," one always ready. I now ascertained to my full satisfaction, that I could not bestow too much *trouble*, as it is *called*, in SAVING my CORN STALKS!

Satisfied of the value of my *labor*, I have since added to the *steaming-box* all refuse potatoes, turnips, cabbage leaves, beets, parsnips, carrots and pumpkins, squashes, cucumbers, &c.; in fine all the vegetable productions of the *field*, *orchard* or *garden*, as the season may afford, "that nothing may be lost"—and I find that I am well paid for the labor bestowed. The last, after absorbing what they will contain of the liquid, goes to the support of "*old Ned*."

AGRICOLA.

* The usual practice in the south is to strip the blades or leaves from the corn stalks, cure and preserve them for fodder, and to make little or no account of the stalks as cattle feed.

† We think our practice has a preference over this mode; it is to pick the corn from the stalks in the field, and immediately to bind and stack the stalks. The corn is then husked in the evening, or on rainy days. Few have sufficient barn room to stow away a large crop of corn in the manner recommended by Agricola.

Miscellaneous.

[We commend to the particular notice of our readers, the following excellent remarks, which we copy from the *Genesee Farmer*, and which form a portion of an address to the patrons of that valuable paper, and the agriculturists of Western New-York.]

That an improved state of farming has within a few years been introduced into this country—that the cultivation of the soil is beginning to be treated on more rational and scientific principles—that the slavish adherence to the maxims and methods of Europe, which have so long obtained among us, are being discarded in favor of systems more adapted to our soils and our climate—that multitudes of worn out and unproductive farms, especially in the eastern counties of the state, have been rescued from that condition and rendered valuable and fruitful, are facts which cannot be denied, and which augur well for our agricultural prosperity. These results are to be mainly attributed to a few things, such as the diffusion of knowledge on farming subjects, the regular and skilful rotation of crops, and the extensive use of plaster in connexion with clover. It is true much more attention is paid to the preservation and proper use of manure than formerly, and much may justly be granted to this; but manure has always been freely used, while our farms were growing poorer, and had not the rotation of crops with the

use of plaster and clover been introduced, the deterioration would have continued in spite of all the manure ordinary farms could have produced. The rotation of crops is founded on the obvious principle that in drawing their nourishment from the earth different kinds of food are required by different plants—for instance, that peas or barley do not deprive the earth of the important principle which furnishes the best food for wheat—that some plants derive more of their support from the air, and take less from the earth than others—and that no two crops which require the same food should be taken in succession from the same piece of land. To this doctrine there may be a few seeming exceptions; such as plants that require for their perfection little besides heat and a small quantity of moisture, as onions have been grown for half a century on the sandy plains of Weathersfield, and the finest melons of the world on the shifting sands of Egypt. Every one must have noticed in some sections of this district a disposition to put in wheat after wheat, and instances have occurred in which such a course has been partially successful; but from the invariableness of the laws of nature, it may be relied on that such farming must be ruinous in the end, and if the abundant materials for wheat in our soils at present should, with such treatment hold out for years, still an impoverished and nearly ruined country must be left to our successors. Of all plants for the renovation of the soil, none can be considered equal or superior to clover, and it may be deemed a happy dispensation of providence that those soils best adapted by nature to wheat, are also the most congenial to clover, and derive the most essential benefit from plaster.

I have said that more attention is paid to the preparation and application of manure than formerly, but still this is a point on which we are most culpably deficient as farmers. There are soils in every country, on which plaster produces little or no effect, and which must speedily, under a course of cropping, become valueless unless frequently and thoroughly manured; and on all soils manure must be considered a most important and powerful auxiliary. Hitherto from the extraordinary fertility of our western soils, the necessity of inquiry respecting this branch of farming has not been very urgent; but the experience of every year is rendering the propriety of giving this subject increased attention, more and more apparent. In Holland and in some parts of England, the business of farming is carried to a higher degree of perfection than in any other part of the world, and perhaps the greatest returns are received for the capital and labor employed, and no where does the subject of manure receive so much attention as in these very places. In those countries quantities of manure, which in proportion to the farms cultivated would appear utterly incredible were not the facts placed beyond the shadow of a doubt, are produced by the skill and labor of the occupants; and if in the Empire State, every rood is to maintain its man, this example must be followed. In Holland, instead of a ton or a ton and half to the acre, which may be considered about the maximum in New-York, from fifteen to twenty tons to an acre are considered as not an extraordinary production of manure, and the results from the application of such a mass of compost are such as might rationally be expected.

But though our grand staple is, and probably will be wheat, still there are many farms where this grain cannot be profitably raised, the owners of which must of course look to other articles of produce for a renumeration of their labors, and to these different sources of wealth the public attention should be properly directed. Those lands in the western district which cannot be called wheat lands, are in general admirably adapted to grazing, and in raising cattle and horses for market, in enlarged dairies, and in the production of wool, there seems to be a ready and profitable employment for skill and capital. To carry these branches of farming into effect, care should be taken to provide the best animals, and to commence with the best breeds for the particular purpose aimed at. It is rarely the case that in cattle the qualities of size and aptitude for fatting, are combined with those of large quantity and richness of milk. Of course the object intended must be considered in the commencement of stocking a farm, or much time and expense may be thrown away. There are multitudes who are engaged in the dairy business, who have never dreamed of testing the quality of the milk given by their different cows, although it is very easily done, and the milk of some cows will at the same expense of keeping yield nearly double the quantity of cream to that given by others. Deep slender glasses are used for this purpose, where the business is properly attended to, but the usual tall champaigne glasses, or where these are not to be had, deep common tumblers will answer the purpose. It ought to be remembered however that the deeper the column of milk in proportion to its diamater, the more satisfactory will be the test. Fill these glesses of the same depth, with milk from different cows, and when they have stood a sufficient time, the thickness of the risen cream can be easily measured on the outside of the glass. By doing this a few times the value of each cow as a dairy cow can be fully known.

In order to breed cattle with success, more attention must be paid to green crops. By green crops I mean common or Norfolk turnips, mangel wurzel, ruta baga, carrots, &c. In no way can so large an amount of food for cattle, horses, hogs, or sheep, be drawn from an acre of land as in one of these crops, or one which in every way is so profitable to the raiser of stock. In estimating the value of green crops there is no necessity of taking the extraordinary yields which are sometimes obtained, as a standard. A thousand bushels of ruta baga and eight hundred of carrots have been raised to the acre, but taking the amount at only one-half—and under almost any ordinary circumstances that amount can be produced—and it may be seen at once that a crop of corn, oats, or potatoes cannot be compared with the ruta baga or the carrot for profit. The man who wishes to make the most of his farm, must raise root crops; for if wheat is his object he can spare much more of his land for that purpose, and yet keep the necessary stock, and if raising stock is his business, he may depend on seeing his herds and flocks through the winter in much better order, and with less expense, than if he relied on hay alone.

Another source, and I believe an exhaustless mine of wealth, has been too long overlooked by our farmers, and our citizens generally. Such is the perfection of machinery and the competition of manufacturers, that most articles of clothing which formerly were made by female industry at home, are now made at these establishments. The wheel and the loom as implements of domestic economy, are now rarely seen or heard; and the woollen, the linen, and the cotton, instead of being the production of the fair hands of wives and daughters, owe their existence to power looms and spinning jennies, and are purchased at the store as would be an article of foreign importation. This is well enough, if the time formerly spent in these domestic avocations, is more profitably employed: on this subject I express no opinion; but can assert with confidence, that the introduction of the silk worm would be in most families not only a source of great profit, but the care and feeding of them an innocent and healthy amusement. The procuring a few mulberry trees is the first step, and there are few places where these cannot readily be procured; this done, the rearing and feeding of the worms, and the whole process to the finishing the cocoons for market, is extremely easy and simple. There is not the least reason why millions should be sent from this country every year, for an article which might be produced here in perfection, and which only requires the care and labor of females and children for a few weeks in a year.

Farmers are more remarkable for their deference to antiquity than perhaps any other class of practical men. They are content to follow on in the routine of their predecessors without inquiring whether the course they are pursuing is not erroneous, and does not admit of decided improvement. "As our fathers did, so do we," is held a sufficient justification of the most absurd systems of culture. To the agricultural societies which have existed within the state during the last fifteen years, much of the improvement in farming which has certainly taken place within that time, may fairly be attributed. These societies awakened a spirit of emulation and inquiry—they brought together men of kindred minds, men ardently engaged in the same honorable and peaceful pursuits, and the meetings were places where opinions and facts were freely and beneficially interchanged. Never were the funds of the state more profitably appropriated than in the trifling sums annually distributed from the treasury among these societies; and the day when the voice of the people shall be so far heard as to cause their revivification under the patronage of the state, may be hailed as a proud one for the resources and spirit of New-York. It is not to the comparatively paltry sum divided that we look for the benefit, but to the spirit of inquiry it will create, and the public attention that will be directed to the interests of agriculture generally.

Next in benefit to agricultural societies, and in a great measure springing from them, is to be placed the influence of agricultural

journals. While their beneficial effects have been almost unlimited, they have injured no one, and now that their utility has been fully tested by experience, that farmer has been guilty of an unpardonable inattention to his true interests, who neglects to provide himself with a well conducted journal of this kind. I am sensible there is a prejudice, an inveterate, but most unfounded and untenable prejudice, against what is termed by some of our cultivators, book farming. With such men it is enough to condemn any proposition, or discredit any statement, that it comes from a book or a journal. They reason thus:—our fathers for a century have been content with thirty bushels of corn, or ten bushels of wheat to an acre, and why should we undertake to be wiser than they? They never heard of a chemical analysis of soils, of turnip culture, of rotation in crops, and agricultural books, and why should we bother our heads about such matters? With such reasonings thousands resist all improvement, and rest contented in an ignorance not the less prejudicial because so shamefully prevalent. And what is this book farming, about which such unreasonable notions prevail? A few cultivators of the earth agree to communicate to each other the results of their experience in farming—raising cattle, sheep and hogs—the best modes of preparing and using manure—the most profitable crops and the best modes of raising them—the best breeds and the best modes of fattening animals, and in short, all things of general interest relating to the occupation of a farmer. These results are committed to writing, go through the press and become a book. He who chooses to follow the results of enlightened experience as there detailed, is guilty of book farming. A gentleman who has money, inclination and leisure, following nature as a guide, commences a series of agricultural experiments which result in doubling the means of existence from a given quantity of land, or in other words, makes two blades of grass, or two bushels of wheat, grow where but one grew before. Such a man is a benefactor to his country; but, if actuated by a noble regard for the general good, and anxious that all should partake with him in the benefit, he sends a history of his proceedings to a journal, that others may avoid his errors; it is denounced as a mere whim, as nothing but book farming. No matter how important or how valuable the published accounts may be, if they add one-half to the productiveness of a farm, there are many, too many, who scout them as unworthy of notice. If, however, we were required to point out the men who had done the most to advance the agricultural interests of the state or country, who have introduced the most successful methods of raising crops, and improving the soil, we should be obliged to fix on those who are emphatically book farmers; men who were bred to other pursuits, but have relinquished them for the safe, honorable, and in their case, eminently successful cultivation of the soil. It is to such men as Powell, Colman, Buel, Bradley, and the lamented Thomas, that the farmer who wishes to adopt the easiest and most profitable course of farming must look as guides, and these are the most thorough book farmers in the country. It is time that this unworthy prejudice against that knowledge of farming which may be derived from books was done away—that farmers should not deem themselves so far advanced towards perfection in their pursuits as to be beyond the teachings of recorded experience. We know there are visionaries in agriculture, as well as in every thing else; men who are mere theorists; who from their studies put forth their vague notions and crude ideas as facts, without submitting them to the ordeal of experiment, the test of time. But the practical, well informed farmer, and such all should be, is not deceived by such fantasies; from the premises laid down, and comparing them with his own experience, he perceives the absurdities to which they lead, and rejects them without hesitation. But the theoretical farmer, who with time, and money, and nature for his guide, submits his ideas to the test of experiment, may obtain results astonishing to himself, and which, when laid before the public, demand its lasting gratitude. To books then we must continue to look for practical instruction in the most approved modes of agriculture. A journal is a reservoir in which is accumulated the experience of ages and the practice of thousands; and to it the young farmer may profitably go for information on a multitude of topics respecting which the inexperienced and uninformed must necessarily be ignorant. To all then who aspire to the honorable title of an intelligent tiller of the soil, we say, take some standard agricultural work—to every present subscriber to the Farmer we say, not only continue your subscription and endeavor to promote its circulation among your neighbors, but become a contributor to its columns, of the results of your farming experience, your success and your failures—preserve the numbers carefully, and see when each volume closes they are well bound—read carefully, compare thoroughly, reduce your knowledge to practice, and you will be singularly unfortunate indeed, if you do not find yourself remunerated ten-fold. WILLIS GAYLORD.

Young Men's Department.

INDUSTRY.

Nothing is more important to your usefulness and happiness in life, than habits of industry. "This we commanded you," says St. Paul, "that if any would not work, neither should he eat." Now this would be the sober dictate of good sense, had the apostle never spoken. It is just as true now as it was two thousand years ago, that no person possessing a sound mind in a healthy body, has a right to live in this world without labor. If he claims an existence on any other condition, let him betake himself to some other planet.

There are many kinds of labor. Some which are no less useful than others, are almost exclusively mental. You may make your own selection from a very wide range of employments, all, perhaps, equally important to society. *But something you must do.*—Even if you happen to inherit an ample fortune, your health and happiness demand all this. To live in idleness even if you have the means, is not only injurious to yourself, but a species of fraud upon community, and the children, if children you ever have, who have a claim upon you for all you can conveniently earn and do.

Let me prevail with you then, when I urge you to start in life fully determined to depend on your own exertions, and to be, in this respect, independent. In a country where the general rule is that a person shall rise—if he rises at all—by his own merit, this determination is indispensable. It is usually idle to be looking out for support from some other quarter. Suppose you should obtain a place of office or trust through the friendship, favor or affection of others; what then? Why, you hold your post at uncertainties. It may be taken from you at almost any hour. But if you depend on yourself alone, your mountain stands strong, and cannot easily be moved.

He who lives upon any thing except his own labor, is incessantly surrounded by rivals; his grand resource is that servility in which he is always liable to be surpassed. He is in daily danger of being out bidden: his very bread depends upon caprice, and he lives in a state of never ceasing fear. His is not, indeed, the dog's life, "*hunger* and idleness," but it is worse; for it is "idleness with *slavery*;" the latter being just the price of the former.

Slaves, not unfrequently are well *fed* and decently *clad*; but slaves dare not *speak* They dare not be suspected even to *think* differently from their master, hate his acts as much as they may; be he tyrant, drunkard, fool, or all three at once, they must be silent, or nine times out of ten lose his approbation. Though possessing a thousand times his knowledge, they must feign a conviction of his superior understanding; though knowing it is they who, in fact do all that he is paid for doing, it is destruction to them to *seem as if they thought* any portion of the service belonged to themselves.

You smile, perhaps, and ask what all this tirade against slavery means, in a part of the country where no slavery exists. But remember, there is slavery of several kinds; there is *mental* slavery as well as bodily; and neither is confined to any particular division of the United States.

Begin, too, with a determination to labor through life. There are many who suppose that when they have secured to themselves a competence, they shall sit with folded arms, in an easy chair, the rest of their days, and enjoy it. But they may be assured that this will never do. The very fact of a person's having spent the early and middle part of life in active usefulness, creates a necessity to the body and mind for its continuance. By this is not meant that men should labor as *hard* in old age, even in proportion to their strength, as in early life. Youth requires a great variety and amount of action, maturity not so much and age still less. Yet so much as age does, in fact, require, is much more indispensable than to those who are younger. Children are so tenacious of life, that they will not *suffer* much, at least *immediately*, if exercise is neglected.

Hence we see the reason why those who retire from business towards the close of life, so often become diseased, bodily and mentally; and instead of enjoying themselves or making those around them happy, become a source of misery to themselves and others.

Most people have a general belief in the importance of industrious habits; and yet not a few make strange work in endeavoring to form them. Some attempt to do it by compulsion—others by flattery—some think it is to be accomplished by set lessons, in spite of example—others by example alone.

A certain father who was deeply convinced of the importance of forming his sons to habits of industry, used to set them to pulling down or removing heaps of stones, and then putting them back again. He has been known to employ them many a day in this alternate removing and replacing of stones. This was well intended, and arose from regarding industry as a high accomplishment; but there is some danger of defeating our own purpose in this way, by *disgusting* the young. Besides, an abundance of labor which is obviously profitable can usually be obtained.

All persons, without exception, ought to labor more or less, every day in the open air. Of the truth of this opinion, the public are beginning to be sensible; and hence we hear much said, lately, about manual labor schools. Those who, from particular circumstances, cannot labor in the open air, should substitute in its place some active mechanical employment, together with suitable calisthentic and gymnastic exercises.

It is a great misfortune of the present day, that almost every one is, by his own estimate, *raised above his real state of life.* Nearly every person you meet with is aiming at a situation in which he shall be exempted from the drudgery of laboring with his hands.

Now we cannot all be "*lords*" and "*gentlemen;*" there must be a large part of us, after all, to make and mend clothes and houses, and carry on trade and commerce, and, in spite of all that we can do, the far greater part of us must actually *work* at something: otherwise we fall under the sentence, "He who will not *work* shall not *eat.*" Yet so strong is the propensity to be thought "*gentlemen;*" so general is this desire amongst the youth of this proud money making nation, that thousands upon thousands of them are, at this moment, in a state which may end in starvation, not so much because they are too *lazy* to earn their bread, as because they are too *proud!*

And what are the *consequences?* Such a youth remains or becomes, a burden to his parents, of whom he ought to be the comfort, if not the support. Always aspiring to something higher than he can reach, his life is a life of disappointment and of shame. If marriage *befal* him, it is a real affliction, involving others as well as himself. His lot is a thousand times worse than that of the common laboring person. Nineteen times out of twenty a premature death awaits him: and, alas! how numerous are the cases in which that death is most miserable, not to say ignominious.

Sloth, a seductive syren, should be most carefully avoided.—*Horace.* The indolent man can never be useful, either to himself or to promote the well being of others.

He is indeed a conqueror who overcomes himself.—*Sat.*

THE CULTIVATOR—APRIL, 1835.

TO IMPROVE THE SOIL AND THE MIND.

THE GARDEN.

There are few subjects more apt to excite the surprise of intelligent foreigners, than the almost total neglect of our farmers to cultivate a garden: and the inference they draw from this omission, is neither complimentary to our good sense, or our good taste In most European countries, a well cultivated garden is not only common among farmers, but even the humble cottager, who lives upon his daily earnings, prides himself in the neat cultivated patch that surrounds his cottage, which administers largely to the sustenance of his family, and affords a variety of grateful delicacies, which cheer his toils and multiply his enjoyments. But we need not cross the Atlantic for evidence of the economy and comforts of a garden. We are not wholly destitute of gardens nor of taste: and there is perhaps no branch of rural improvement that is making greater progress among us than this. We have probably advanced farther in improvement in horticulture during the last twenty years than in the preceding century. The work will progress. Who among us that has known the pleasure of daily partaking of fruits and vegetables, in all the variety of our climate, freshly plucked or gathered from his garden, does not esteem them among the choicest blessing of life. Our old men yet remember the time, when potatoes were hardly deemed worth cultivating, or when they were considered as innovating upon the settled rules of the farm, and when half a dozen bushels were the extent of a farmer's crop. Yet this root is now deemed indispensable, and its cultivation, on a large scale, considered as a matter of economy. It forms the principal food, in countries where it was once unknown. What the potato was a century ago, many fine fruits and garden vegetables are now—treasures unknown or misprised by the mass of farmers. The products of a kitchen garden materially lessen the consumption of more expensive food, afford a grateful variety for the table, and are highly promotive of health. They are besides matter of substantial profit to the cultivator, for there is scarcely a district of our country which does not furnish a market for any surplus that is produced. What man would consent to have destroyed a fine vine, or peach, plum or pear tree, which produced him choice fruit, for ten times what it cost him? We have in our mind a friend, who cultivates two acres in fruit and vegetables: and we know he has repeatedly sold in a year, of the former, more than a thousand dollars worth, and had a constant supply of both for his table. The outlay for all this was but trifling, for he soon became self-taught, and propagated his own fruit trees. A greater income this, from two acres, than many farms of a hundred yield.

To decend somewhat to detail. Say a choice grape vine will cost two or three shillings—a plum four—a pear three, and a peach two, and currants and gooseberies enough to make up, in the whole two dollars. We give nursery prices for the choicest fruit. In a few years, the vine will yield him a bushel or two of grapes, and the trees a bushel or more of fruit each, which will be worth in market, or in his family, at least ten dollars, with a fair prospect of a rapid increase in the product. Having formed the nucleus, the boys, with a little practice, will soon acquire the art, which every farmer ought to possess, of increasing the quantity and variety, by budding, grafting, layering, &c. And the labor, that will be required in doing this, need abstract nothing from the profits of the farm—the hours that are misspent, or wasted in idleness, will suffice for the task. Every plant thus produced, will become an object of interest. In 1832, the fruit from two pear-trees sold for $45, at the fair market price.

It is not alone from mercenary views, and the mere gratification of the animal appetite, that we recommend the cultivation of a garden. The garden administers to the wants of the mind as well as of the body. We are endowed with senses other than the sense of taste, which may be made to contribute much to the higher enjoyments of life, and which receive gratification in the beauties and fragrance of the vegetable kingdom. He who realizes in the trees and flowers of the garden, the wonderful handy-works of his Creator, provided for the wants and comforts of man, possesses a scource of happiness unknown to the mercenary worlding. The pleasures which arise from the beauties of the natural world, are pure and unalloyed, and are frought with humility and benevolence.

In order to facilitate a knowledge of propagating, and the introduction of good fruits, we have procured cuts illustrating the most popular modes of grafting, and will give brief directions for managing the process; and we shall in due time speak of the other methods of propagating, and give a list of the most approved garden and orchard fruits. From a pretty general acquaintance with fruits, native and foreign, acquired by critical observation for many years, in our business as a nurseryman, and from being somewhat of an amateur, we venture to say, that nine-tenth of our farmers are unacquainted with the choice fruits which the garden yields, particularly of the peach, pear and plum; and that the best fruits are yet but partially disseminated among them.

April is the general season for grafting in this latitude, though it is sometimes performed in March, and sometimes omitted till May. The grafts should, however be cut before the buds begin to swell. The scions are most likely to live if inserted when the sap is circulating freely, for then the wounds soonest heal.

The materials and implements required for grafting, are—1. A sharp knife to cut and pear the graft and stalk;—2. A strong knife and mallet, to split the larger stalks, and a small hard wood wedge to put into the cleft while the scion is fitted to its place;—3. Strips

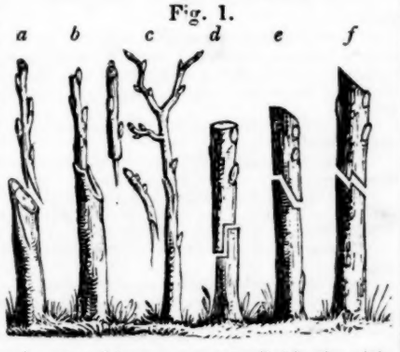
of bass matting, or other soft string, to tie around the stalk and graft; and 4. Some good grafting wax or prepared clay, to cover over the worked part. If clay is to used, it should be previously well beaten, and a portion of fresh horse dung mixed with it during the operation. A grafting wax, which we have used for years with success, is made by mixing and melting together four parts of rosin, two parts of tallow, and one part of bees wax;—the whole to be afterwards incorporated and worked by the hand, like shoemaker's wax. This may be applied over the grafted part in a thin layer, or first spread on a cloth and then applied in strips of proper size. The wax or clay is applied, 1. To prevent the extravasation of the sap from the wounds; 2. The too sudden drying of the wood: and 3. The introduction of rain water into the wound or cleft. It is evident, therefore, that whatever sort of coating is adopted, it should be applied without delay, and so as effectually to exclude air and water.

The object to be aimed at in the process of grafting, is to bring the inner bark, and the sap-wood of the stalk and scion, in nice contact, so that the ascending sap of the stalk will pass freely into the sap wood of the scion, and the decending sap of the scion, which has been elaborated and prepared in the leaves, and which descends through the inner bark, to pass freely into the inner bark of the stalk. This elaborated sap soon hardens into wood and covers and heals the wound.

There are more than forty different modes of grafting, practised by professional nurserymen. We shall only speak of those which are best adapted to the practice of the orchard and garden.

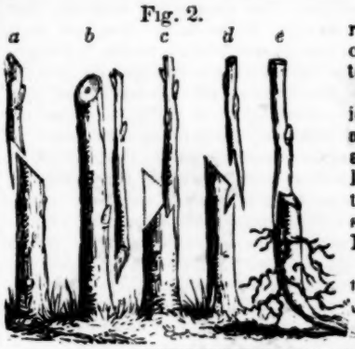
Cleft grafting, (fig. 1, *b*.) is most practised upon strong stalks, or in heading down, or regrafting old trees. There are two methods of doing this: one described in the cut, where the stalk is first cut off obliquely, and the sloped part is then cut off horizontally, near the middle of the slope; a cleft nearly two inches long is then made with a sharp knife or chissel, in the crown, downwards, at right angles with the sloped part, taking care not to divide the pith. The cleft is kept open by the knife, or the small wedge; the scion has its extremity, for about an inch, cut into the form of a wedge: it is left about the eighth of an inch thick, on the bark side, and brought to a fine edge on the inside. It is then inserted into the opening prepared for it, and the knife or wedge being withdrawn, the stalk closes firmly upon it. The other, and the more common mode is, to saw off the stalk horizontally, make the cleft through its centre, and insert either one or two grafts in the outer edges. In both cases the stalk should be tied and covered with the wax or clay.

Fig. 1.



Whip-grafting, (fig. 1, *a*.) or as it is sometimes called, tongue grafting, is mostly adopted in nurseries, where the stalks are generally small. It is desirable that the stalk and graft should be of nearly similar size. The scion and stalk are cut off obliquely, at corresponding angles, as near as the operator can guess; then cut off the tip of the stalk obliquely or nearly horizontally; make now a slit nearly in the centre of the sloped face of the stalk downwards, and a similar one in the scion upwards. The tongue or wedge-like process, forming the upper part of the sloping face of the scion, is then inserted downwards in the cleft of the stalk; the inner barks of both being brought closely to unite on one side, so as not to be displaced in tying, which ought to be done immediately, with a riobon of bass, or other soft string, brought in a neat manner several times round the stalk. The next and finishing operation, is to cover the whole wound with the prepared wax or clay already described. The French mode of whip-grafting, which is also in common use here, differs from the English, in their never pareing more off the stalk, however large, than the width of the scion, (fig. 2, *a. b. c. d*) In both, the stalk is sometimes left a few inches above the graft till autumn, to tie the young shoot to, lest it be blown off.

Fig. 2.



Side-grafting, (fig. 1, *c*.) resembles whip-grafting, except it is performed without taking off the top of the stalk.

Shoulder, or chink grafting, is performed with a shoulder, and sometimes also with a stay at the bottom of the slope.—It is chiefly used for ornamental trees, where the scion and stalk are of the same size, (fig. 1, *d. e. f.*)

Grafting in the root, is sometimes performed in nurseries, where stalks are scarce, as described in fig. 2, *e*.

PRUSSIAN SCHOOLS.

We have perused, with much interest, the report of M. Cousin, on the state of public instruction in Prussia. It presents, in our opinion, the best model of instruction that can be any where found; and although some of its features may not be exactly suited to a republican form of government, yet we doubt whether there is any system from which we can draw more important lessons of instruction. It contains much worthy the high consideration of the American public: and it may be read with profit by teachers, pupils, parents and public authorities. It contemplates, and virtually accomplishes, the education of an *entire nation*, in the knowledge and habits which fit them for the duties and business of life, and which tend to promote the good order and happiness of society. Although this model has originated under an arbitrary government, we should not be squeamish about adopting such parts of it as may promise to be beneficial here. "The true greatness of a people (or of an individual, does not consist," says M. Cousin, "in borrowing nothing from others, but in borrowing whatever is good, and in perfecting whatever it appropriates. I am as great an enemy as any man," he continues, "to artificial imitations, but it is mere pusillanimity to reject a thing for no other reason than because it has been thought good by others."

The schools of Germany, whether for elementary or the higher branches of instruction, have for a long time maintained an elevated rank; and it has been admitted, that literary and scientific knowledge has been more generally diffused there than in any other country. Of the German States, Prussia has held a high place in respect to learning. The great Frederick did much to improve public instruction; but it was not until 1819, that the system was matured which has given merited celebrity to the Prussian schools. M. Cousin was sent to Prussia, to examine personally into the method of public instruction. Every facility was afforded him by the public authorities to prosecute his inquiry, and arrive at correct data. The report under consideration, which was made to the minister of public instruction in France, contains the result of his labors—so far as regards elementary or the lower order of schools.

As the subject of instruction is one of primary importance in a free government, and particularly to the agricultural community, who with us must ever, from their numbers, give the impress to our national character, and constitute the safeguard to our liberties, we feel that we are doing an acceptable service, and are perfectly within the line of duty, in laying before the readers of the Cultivator, some of the more prominent, as well as some of the commendable features, which distinguish the Prussian system of instruction.

The Prussian schools, from the highest to the lowest, are under the supervision of a minister of public instruction, and who is responsible to the king only, aided by a council of distinguished men. The kingdom is divided, to facilitate instruction, into provinces, departments, circles and parishes, which, for the sake of comparison, may be likened to our states, counties, towns and districts. Each has an organized board of officers, who have in special charge the execution of the school laws in their several spheres, and who receive their instructions, and make their reports to a higher authority. The prominent object, and every class of citizens is made to feel a deep interest in its literal fulfilment, is, to *educate every child in the kingdom*, by keeping him at school at least *seven years*; and to ensure him a good and useful education, by employing none

but *competent* teachers, prescribing the course of studies, and watching over his habits and morals: It is to do that for *every* child which a wise and prudent parent would wish to do, and ought to do, for his off-spring. Popular instruction is recognized as a social duty, imperative on all for the sake of all. Some insist, that it would be an infringement of constitutional right, to make the educating of their children a compulsory duty of parents here. It may be so: but it may be urged on the other hand, that education is an obligation which the parent not only owes to the child, but to the state; and that if he has a natural right to bring up his child in ignorance, it is like other natural rights which he is bound to give up, and which he does give up, upon the altar of public good. It cannot possibly work an injury to the child. It may be said that all children belong to the state, and that their education devolves on the state, whenever parents fail, for want of ability or inclination, to fit them to become wholesome and useful members of society. We consent to give up personal rights, and to perform personal duties, for the common good. We contribute to build jails and poor-houses, to punish vice and alleviate want, both of which would be materially lessened by a seven years' instruction of our youth in a good school. But we are wandering from our object, which is to give some of the prominent features of the Prussian system of education. This we can only do in a brief manner at present.

Duty of Parents.—The law compels all parents, or those on whom children are dependent, to keep them at school from their seventh to their fourteenth year. Children must be put to the school of the parish, unless the parent shows that he is educating them at some other school, or giving them private instruction. In case of neglect, admonition is first employed, and if this fails, coercive means are resorted to. The child is taken to school by the police, and the parent may be punished by fine, imprisonment and disqualification for local office. "Care is to be taken every where to furnish necessitous parents with the means of sending their children to school, by providing them with the things necessary for their instruction, or with such clothes as they stand in need of." Adequate means are provided for enforcing these regulations.

Duty of the Parish, &c.—Each parish is bound to maintain a primary school; each town at least one burgher or middle school: small villages, not able to maintain a primary school, may associate with the surrounding district for this purpose. The children must not exceed one hundred to a master. The law declares what is required for the complete maintenance of a school, in order that it may answer its end,

"1. A suitable income for masters and mistresses, and a certain provision for them when they are past service.

"2. A building for the purpose of teaching and of exercise.

"3. Furniture, books, pictures, instruments, and all things necessary for the lessons and exercises.

"4. Pecuniary assistance for the necessitous scholars."

The school committee are charged to make the salaries of teachers as high as possible, and a minimum is fixed, below which the salaries shall not be reduced, in order to command the best talents and qualifications. The school-house is required to be placed in a healthy situation, to be roomy, well aired, and kept with the greatest neatness.

"Every school in a village or small town shall have a garden, cultivated according to the nature of the country, either as kitchen garden, orchard, nursury-garden, or laid out for raising bees; and this garden shall be made available for the instruction of the scholars.

"Whenever the nature of the spot will admit, there shall be a gravelled plain or court, in front of the school, for the children's exercise.

"The materials necessary for instruction consist, above all, in a sufficient collection of books for the use of the school.

"There shall be, according to the degree of every school, a collection of maps and geographical instruments, models for drawing, writing, music, &c.; the instruments and collections necessary for studying mathematics and natural history; lastly, according to the extent of the system of instruction, there shall be the apparatus necessary for gymnastic exercises, and the tools and implements suited to the teaching of the mechanical arts or manufactures in the schools in which that branch of knowledge is introduced.

"Moreover, every school is bound to furnish gratuitously to poor scholars, books and other necessaries.

"That on occasion of any division or allotments which the parishes may make, sufficient land shall be allotted to the school-master for the cultivation of his vegetables and the feed of a cow; about two acres of good land, or more if the land is bad."

No master is allowed to collect the school moneys. These must be collected by the school committee, who pay the teachers. The teacher is not permitted to follow other business for profit, lest it should abstract his attention from his school, or lower his dignity or morality. The orphan children of school-masters have a special right to all the benefit of establishments for education, and pensions are granted to widows and orphans of school masters.

"Masters and inspectors," says the law, "must most carefully avoid every kind of constraint or annoyance to the children, on account of their particular creed. &c.

"In towns, public education and the maintenance of it are not to be postponed to any other of the parochial necessities or claims whatever. They are to be reckoned among the objects to be provided for in the first place.

"No one shall refuse to pay the rate levied upon him under pretext that the school of his parish, or of religious persuasion, are flourishing, since it is necessary to provide for the general education of the parish, and all schools are open to all, and may be equally profitable to every individual."

General objects and different gradations of primary instruction.—There are two stages of gradation in primary instruction, elementary schools and burgher schools.

"The elementary schools have for their object the regular development of the faculties of man, by more or less instruction in the branches of knowledge indispensable to the lower classes, both in town and country.

"The burgher schools bring the child to that point at which peculiar aptitude for classical studies, properly so called, or for some particular profession, may manifest itself.

"*The paternal attachment of the masters, their affectionate kindness towards all their pupils, will be the most powerful means of preserving them from immoral influences, and of inciting them to virtue.*

"*No kind of punishment which has a tendency to weaken the sentiment of honor, shall, on any pretence, be inflicted;* corporeal punishments, in case they shall be necessary, shall be devoid of cruelty, and on no account injurious to modesty or to health."

Incorrigible scholars, or who persist in bad habits, may be expelled.

"Primary instruction shall have for its aim to develop the faculties of the soul, the reason, the senses, and the bodily strength. I shall comprehend religion and morals, the knowledge of size and numbers, of nature and man; corporeal exercises, singing, and lastly, imitation of form, by drawing and writing.

"In every school for girls, without exception, the works peculiar to the sex shall be taught.

"Every complete elementary school necessarily comprehends the following objects:—

"1. Religious instruction, as a means of forming the moral character of children according to the positive truths of Christianity.

"2. The German language, &c.

"3. The elements of geometry, together with the general principles of drawing.

"4. Calculation and practical arithmetic.

"5. The elements of physics, geography, general history, and especially the history of Prussia.

"Care must be taken to introduce and combine these branches of knowledge with the reading and writing lessons, as much as possible, independent of the instruction which shall be given on those subjects specially.

"6. Singing, with a view to improve the voice of the children, to elevate their hearts and minds, to perfect and ennoble the popular songs, and church music or psalmody.

"7. Writing and gymnastic exercises, which fortify all the senses, and especially that of sight.

"8. The simplest manual labors, and some instructions in husbandry, according to the agriculture of the respective parts of the country."

"Every scholar, on leaving school, receives a certificate of his capacity, and of his moral and religious disposition, signed by the masters and the school committee.

Every burgher school shall afford instruction in religion and morals, the German language, Latin, mathematics, drawing, writing, singing, gymnastics, and

"Physical science, so far as is sufficient to explain the most remarkable phenomena of nature.

"Geography and history combined, in order to give some knowledge of the earth, of the general history of the world, of the people who inhabit it, and the empires into which it is divided."

Masters are charged to study the particular character and qualities of each pupil. No special books are prescribed, that no shackles may be imposed to improvement. Masters are to adopt the methods which gradually and constantly enlarge the understandings of the children, and not such as instil mere mechanical knowledge. Examinations must be public. The authorities, the clergy and the masters are required to unite their efforts to strengthen the ties of respect and attachment between the people and the school.

We have gone thus far in explaining the organization, objects and gradations of elementary schools, and in particularizing the studies and exercises which are pursued in them. In our next number, we intend to give some account of the normal schools, that is, schools for the education of masters, to teach in the elementary schools. In this branch of instruction, we have hitherto

had little experience, and yet it is one on which the efficiency and usefulness of our whole system of public instruction, and indeed our religious, moral, and we may add, political character, very materially depends.

BOOK FARMING.

We have been told of the following facts, and have only to regret that the like to them are not of more frequent occurrence. A number of intelligent farmers, residing in a neighborhood, somewhere, we believe, in Dutchess county, concluded to form a farmer's association—to make a common stock of their knowledge and observation—believing that knowledge, like money, would be productive in proportion to the capital. It was known that A. raised the best horses, and got the best price for them; that B. was far more successful in his wheat and corn crops than his neighbors; that C. reared the finest neat cattle, and kept the best cows and oxen; that D. excelled in sheep husbandry; and, in short, that some individual excelled the rest in a particular branch of husbandry. Each possessed not only some excellence, but some glaring defec in his management. Thus the farm stock of one was sickly, and many died, because the owner did not know how to manage them; another's farm had become dreadfully impoverished, from neglecting the manure, and from close cropping; while the farm of a third was neither fit for plough land, or for sweet grass, on account of the water which every where saturated the soil, and rendered it poachy, cold and sour. Unlike too many now a days, each of these men was conscious he could learn much from his neighbor's practice, which would enable him to manage his farm with more profit—and that he could teach his neighbors something in return. These expectations were amply realized; but as the members lived somewhat remote, it struck them that it would save much time, and be a more sure way of rendering the improvements of all available to each, if they were to write down their practice in the particular branch in which they respectively excelled, and the principles, or science, upon which that practice was based. This was accordingly done, and for their mutual convenience, as well as for the benefit of others, the whole was printed, and these men were afterwards denominated, by some of their envious neighbors, *book-farmers*, because they took their instructions from a *printed book*. This did not disturb them; for they got from their book the secrets by which the others had excelled in their particular department, and each profited by the good management of his neighbors. The consequence was, that all gained by the interchange. The defects of all were speedily remedied, and in a few years prosperity crowned their labors; and they now exhibit, we are told, the best models of profitable farming any where to be found in the land; and they enjoy the felicity of reflecting, that while they have greatly benefitted themselves and their families, they have by their example and instruction, done much good to others. They have afforded a fair illustration of the advantages of book farming, when combined with intelligent practice.

Were this example extended to the farming community of our country, how greatly the work of improvement would advance, and the comforts of the human family be multiplied: were each to contribute his mite of practical knowledge, in the branch in which he most excels, what a treasure of information would be collected, to guide us in our practice, and to stimulate us to habits of industry. And do we not already possess, in a considerable degree, these precious advantages? What are our agricultural journals, but a record of instructions, by the best farmers of our own and every other country—a detail of the methods by which they have succeeded—have excelled—in the various departments of husbandry! There is not a man in the community who may not profit, in some degree, by the teachings of these journals. The self wise are ever the most profoundly ignorant: for as we advance in knowledge, we become more and more humbled by the consciousness of our comparative ignorance.

We beg that the readers of the Cultivator will take this matter into serious consideration, and remember, that an obligation rests upon them individually, to requite the favors which they are monthly receiving from others, by communicating whatever of their practice that may promise to be beneficial to their brother farmers.

A correspondent recommends the rubbing of the limbs of the plum, with soft soap, to prevent the black canker. He says he has tried it with success.

MADDER—(RUBIA TINCTORUM.)

This plant has a perennial root, and an annual stalk. It is cultivated for the roots, which, after being dried and ground, are employed in considerable quantities in dying a fine red color, and likewise as a first tint for several other shades. It is principally cultivated in Holland, the province of Zealand being almost entirely covered with it, from whence it is exported to every part of Europe and America, yielding almost incalculable profits. The imports of this article, for the use of our manufactories, is stated to amount in value, to more than two millions of dollars annually. Our soil and climate are found to well adapted to its culture, and some successful experiments have been made in raising it in the counties of Madison and Otsego. We refer the reader to the communications of Mr. Bronson, a cultivator of it, which will be found in pp. 85, 141, of our first volume. We invite the attention of our farmers to the subject, as a matter of importance to them and the community at large.

Madder does best in a deep rich sand loam, moist but not wet. It requires three summers to come to perfection; and as the roots strike deep, the ground should be ploughed and mellowed to the depth of two and a half or three feet, for its reception. Miller says it should be planted with a dibble, (it is propagated by off-setts from the old roots,) in rows from two to three feet apart; while Beechstein says they should be planted only six inches asunder. The practice in this country, we believe, for we are not personally familiar with it, is to plant in rows four to five feet apart, and to cultivate rows of corn or potatoes between them, at least the first year. The season for planting is in May or June. The acre produces from ten to fifteen and twenty hundred weight. The price in the market is about 20 cents per pound.

GRAIN WORM.

We promised to insert the memorial of the State Agricultural Society to the Legislature in this number; but as we understand that the committee to whom it was referred, deem it not worth reporting upon, we shall content ourselves with stating its purport. The journals of the day noticed it as being an application *for aid*. The fact is not so. The memorial states, that the ravages of the grain worm have become alarming; that in some of the northern and eastern counties, the loss incident to their destruction of the wheat crop has already exceeded, by computation, two hundred thousand dollars; that it is progressing south and west, at the rate of 40 to 60 miles a year; and that unless some means are devised to check the evil, it threatens to become destructive to the great staple of the west. Viewing the magnitude of the evil, and the prospect of its greatly increasing, the society thought it might comport with the duty and the dignity of the legislature, who are appointed to watch over the interests of the state, to endeavor to arrest it, by holding out pecuniary rewards for the discovery of an efficient remedy. This, they supposed, would tend to call the attention of scientific as well as practical men, particularly to the subject, and might eventuate in the discovery of a preventive of the evil—in which case the state would be benefited a thousand times the value of the premium to be paid;—and if no such discovery should be made, then the money would remain in the treasury. There are men who still believe it is impious to raise rods to avert the lightning from our buildings. The money which is often spent in a day's useless debate, at the shrine of personal vanity, if offered to check this evil *might* save the state many millions of dollars; and could not possibly do any harm.

PEACH TREES.

A correspondent of the Farmer and Gardener says, that having cleared his peach trees from the worms, he took some fine screenings of anthracite coal, and having cleared away the dirt from about the stock, put about a quart or two of screenings to each; and that the trees thus served, were, a year afterwards, wholly free from worms. In corroboration of the efficiency of this remedy, we add, that we have applied the ashes, blended has they always are with fine coal, in like manner, and with like apparent success.

Stock and Pattern Farm.—A petition is before the Legislature of New-Hampshire, for establishing a farm of this description in some central part of that state. Though late, the agricultural community seem to be awakening to a sense of their importance in society. They are not only the main source of national wealth, but they

constitute the source of political power. They are the main earning, paying, and, when necessary, fighting class. If the fountain is impure, the stream will be impure also. The high responsibilities, and important duties, which devolve upon the farmer, demand, that he should be well informed.

CORRESPONDENCE.

Communications read before the State Agricultural Society, by H. Hickock, Esq.

THE CULTIVATION OF WHEAT.

There are two causes which, when our winters are open, operate injuriously on wheat crops. One is, the high and dry winds, which prevail in March; these blow off the soil in many situations, and, by leaving the roots of wheat exposed, occasion their destruction. Another cause is the heaving of the soil, occasioned by the alterations of cold and warm weather. The water in the soil, in the act of freezing, expands and raises up the earth, and also the roots of the wheat-plants which the earth embraces; when a thaw succeeds, the earth being heaviest, falls down first and leaves the roots of wheat a little elevated, and by repeated changes of the weather, the roots are so far thrown out as to perish.

Farmers when convenient, usually sow their winter grain early in September, upon a supposition which guides their common practice, that grain thus early sown withstands best the action of unfavorable seasons. This supposition is founded upon the very plausible theory, that as the oldest roots will be longer and more numerous and take a firmer hold of the soil than those which are younger. they will be the least exposed to be thrown above it, and at the same time, from their greater strength, be more tenacious of life. But experience informs us, that wheat, sown as late as the first or even the second week in October, very often survives with less injury than that which is sown in the early part of September. Indeed farmers very generally admit, as the result of their experience, that rye, whose laws of vegetation must be nearly the same as those of wheat, sown so late in the season as barely to come up, is most likely to withstand an unfavorable winter. Still the very plausible theory which has been mentioned very generally induces them to sow rye early as well as wheat, in direct opposition to conclusions which have been drawn from actual observation.

An experiment was made last autumn for the purpose of collecting some further information on this subject. On the first day of September last I excavated a spot of ground six feet square. On the one side, the excavation was about six inches deep, on the opposite side, its depth did not exceed one inch. Seed wheat was placed over the bottom, so that the kernels were about four inches distant from each other, the excavation was then filled up. The was a suitable mixture of gravel, sand and clay, for wheat, and of ordinary fertility. This was the latter part of the extreme drought which prevailed last summer, and the soil was dry, warm and finely pulverized before it was thrown on the wheat. These circumstances, except the extreme dryness of the soil, were highly favorable to the vegetation of seed at the greatest depth in the earth. On the fourth of the month there was a heavy shower which not only wet the soil, but beat it down close and hard. On the ninth of the month the plants began to show themselves; but none came up from a greater depth than about three and one half inches. Two or three days after the second leaf had displayed itself, some of the roots were taken up and examined. It now appeared that nearly an inch below the surface of the ground, a new joint was found which was the basis of the second leaf, and also of a new system of roots. There were now two tiers of roots; the seed or knot adjoining it, had generated the lower tier, and the new joint the upper one. These two tiers or systems of roots were connected together by a root resembling a cord or thread, and, in one instance, I cut off this connecting thread and transplanted the upper part. This grew with little apparent check from its curtailment; but the under part died, although the soil above it was opened so as to afford it the advantages of air and solar heat. On the 20th day of September, I examined another plant, which had its two regular formations as expected, and, what was not expected, a blade was discovered about an inch long, which had started from the lower system of roots, and would doubtless have found its way to the surface, had it not have been disturbed. It is to be remarked, that this plant sprung from seed placed under cover of nearly four inches of soil, which was about an inch deeper than any of the other plants examined, and that some of the tops of the wheat plants had been eaten off and trodden down by accidental intrusion; a fact unregarded at the time. On the 26th day of September I examined another root, expecting to see the blade from below more perfectly developed, none however was discovered; but a third tier of roots was found at the surface of the ground, which proceeded from the second as that had from the first system of roots. On the 16th day of October I placed some seed wheat about two inches in the ground; their delay in coming up induced me to suppose that they had perished from cold and wetness; but at the expiration of 3 weeks they made their appearance, and although the ground remained open several weeks longer, no second leaf appeared, of course no joint or second system of roots had been formed. The very different formations in the roots of wheat, which this experiment has disclosed, proceeded from causes appropriate and capable of being ascertained, but to distinguish them with certainty, other trials must be made and conducted with greater accuracy than the one of which an account has been given.

From these experiments, though inaccurate, some conclusions may perhaps be drawn of practical use. All plants, which live over winter, possess an apparatus, by which they supply themselves, in autumn, with food for their sustenance in spring. This food consists mostly of saccharine matter which is enclosed in a proper receptacle. When this receptacle is formed near the surface of the earth, the fermentation of its contents is excited by frequent changes of weather, the sacharine matter is decomposed and the plant perishes from the want of food, and perhaps also from the rupture of its vessels.

All wheat, shallow sowed, must have its reservoirs of food but slightly covered with soil, and of course they are fully exposed. When wheat is sown early at any depth, a second and, sometimes, at least, a third system of roots is formed within an inch of the surface. In these many stems originate, each of which has its receptacle of nourishment as its base, and it is quite certain that in most instances, the food which was contained in the seed and the adjoining knot is entirely exhausted by the supplies of nourishment it affords the upper portions of the plant. The life of early sowed wheat must then, like that which is shallow sowed, depend upon the preservation of the resorvoirs of saccharine matter which are placed at or near the surface of the ground, and of course exposed to the unfavorable action of variable weather during winter.

Wheat, which is late sowed, generates no second blade or new system of roots, and of course the nourishment for spring's use is retained in the receptacle which adjoins the seed. If then we sow sufficiently late in autumn, and place the seed deep in the soil, we shall provide every security against the hazards of bad weather which the nature of the case admits of.

In the ordinary course of husbandry, some of the wheat is necessarily deposited at considerable depth in the soil, and when this takes place sufficiently late in the season, the receptacle of food will be protected by its covering of earth, and a partial crop will often be realized, although there may be, when the spring opens, no signs of life on the surface of the field. In such cases as the destruction of the blade, which issues from the seed-roots in autumn, can be of little importance, one would suppose that the surviving plants would grow the more vigorously, from their being less in number, and, by tillering, produce many stems with large well filled ears; such however is not the fact; usually the stems are single and the heads are not large. To account for this, it must be recollected that, after the ground has thawed in spring, the earth settles and often becomes so extremely hard that doubtless many plants die, in their struggle to overcome the opposing resistance, and the surprise is, that any should possess vigor enough to protrude even a single stem through the hard earth that covers it.

From this view of the subject, the practice may be recommended, of effectually harrowing the field in the spring after the ground has settled, in order to supply the plant with fresh air and give a free passage to its upward growth. After the harrow has been used, the roller ought to be employed to reset such roots as have been displaced and diminish the evaporation of moisture.

In England a wheat plant was taken up, seperated into eighteen parts and replanted, and by successive divisions and replantations, a crop of three and one-third pecks of wheat was obtained in less than 18 months from the time the seed was sown. If the roots of wheat can be so minutely divided and successfully replanted, there is little danger than the freest use of the harrow can be injurious,

provided the roller be also used. The fact appears to be, that nothing is necessary to the vernal growth of the plant, but the preservation of the apparatus which contains the saccharine matter which is its proper vernal food; so that if the roots and top be cut off, and the bulb be planted in a genial soil, the plant will grow.

Notwithstanding the arguments which have been urged in favor of sowing wheat late, it must be conceded that, when early sown and our fields are cultivated in the usual manner, it produces the largest crop, if it survive the cold season. Whether such improvements may not be made, as to combine the benefits of a sure and large crop, is a question still open to investigation; the probability is, that both advantages may be secured, by a more correct knowledge of the proper time to sow, and of the best methods of culture.

In the first volume of transactions of the society for the promotion of agriculture, arts and manufactures, instituted in the state of New-York, it is stated that, in Huntington, Suffolk county, fifty two bushels of wheat had been raised by manure on an acre of land, and Mr. Downs is said to have raised on a poor gravelly dry soil, by the use of fish as manure, at the rate of 128 bushels of rye an acre. In this case, the rye would doubtless have lodged and been of little value, were it not that it was twice eaten off by his neighbor's sheep which broke into the lot; once when the rye was nine inches high, and again when it was about six inches high.

The porduction of so large a crop of wheat and of rye must have proceeded from causes which are steady and uniform in their operation, and if all the circumstances which had occurred to produce them, had been distinguished and noted down; similar crops might have been again raised. Some things which occurred during the cultivation of this rye crop, may be ascribed to accident or chance, so far as Mr. Downs' sagacity was concerned, but the causes which proximately occasioned the crop, did not work by accident or by chance, but agreeably to laws or rules from which they never deviate. This uniformity of operation lays the foundation for making future discoveries, and brings within the grasp of our faculties the knowledge of increasing our crops by methods the least laborious and expensive.

The period may arrive when the farmer shall pursue his methods of culture with an anticipation of the consequences which will result, analagous to that of the mechanician in the construction of a machine, and when by direct means, he shall procure greater crops than ever were obtained by mere empirical trials.

Time was when the greatest philosophers taught the doctrine, that all things pertaining to the surface of the earth were too irregular and too much under the governance of chance, to admit of scientific inquiry; this error has, within the two last centuries, been dispelled. But a similar error, in regard to rural affairs, is embraced by almost all our practicial farmers, and the task of correcting and exposing it, is devolved, it would seem, upon the unaided efforts of a few individuals. Here then is the difficulty.

MOWING AWAY GRAIN.

It is desirable in mowing away grain not only to guard against the depredation of vermin, but also to obtain the greatest stowage. To accomplish these objects it is necessary ,first to lay a course of sheaves round the outside of the hay with their buts out and close together. The buts of the second course should just touch the bands of the first; those of the third course, should lay on the bands of the second, and the same rule of placing the last course a little higher up on the preceding one, ought to be observed throughout, so that the layers of sheaves should have a convex form, gradually rising from the outside towards the centre, and for this purpose the centre ought to be well filled in. By this arrangement every layer will be a little more crowning than the previous one, and so it ought to be. The centre of a mow will always settle more than the outside, and if the layers are made level, they will soon become concave or dishing, as it is termed, and there will be a general pressure of the exterior sheaves towards the centre, of which the consequence will be an unoccupied space between the buts of the sheaves and the sides of the barn. But if the layers of grain are of a convex form, the outside sheaves will, as the mow settles, be pushed back by the central ones, close against the sides of the barn, upon the same principle on which both sides of a log will be pressed out by the force of a wedge driven between them. For a similar reason, if hay be put at the bottom of a mow of grain, the surface on which the grain rests ought to be a little crowning. But still the mow, as our barns are usually constructed, will not have that compactness which it ought to possess; the buts of the sheaves which rest on the girts are prevented by the girts from settling, so that a space is left beneath them, which both occasions a loss of stowage and affords a passage into the mow for mice. To correct this evil, the girts should not be more than three inches broad, and further strength, if necessary, should be supplied by giving them greater depth.

DESTRUCTION OF WEEDS.

The spirits of turpentine, I have found a subtle poison to all plants experimented upon, and among others I have applied it to milkweed, burdock and Canada thistle; a tea-sponful dropped on the stem, will run down and destroy it to the ground, and if the root is not, on the first trial, destroyed, a repetition will be sufficient. This remedy may be of particular use where weeds start up from under stone walls or other inaccessible places.

Johnswort is regarded by many farmers as more noxious than the Canada thistle. It frequently usurps whole fields to the exclusion of all the valuable grasses. On some spots of land covered with this weed I spread gypsum, at the rate of three bushels an acre, and had the satisfaction to find that the spots were soon covered with a thick mat of white clover and other grasses; while the Johnswort was part running out. It is quite possible that a less quantity of gypsum per acre might answer a similar purpose.

COMPOST.

There are two ways of making a compost, or mixture of earth with manure. Agreeably to one method, a mound is formed in the barn-yard or near it, consisting of alternate beds of manure and earth; when the manure has fermented, the mass is turned over with the spade and partially mixed. After a renewel and subsidence of fermentation, the materials are again turned over with a spade, and more thoroughly blended together. The compost is then drawn out and spread on the field.

The other way of mixing earth with manure, is much less laborious and expensive, and is thought to be, in many respects, more advantageous. The method is this. In the spring of the year, draw out all the manure, including straw, cornstalks, cobs and all other coarse materials fit for the purpose, into the field; spread it and turn the whole under the soil, from six to twelve inches deep, with the plough. In order to have the work well done, one or more persons must follow the plough, and with a rake, or hoe, or fork, place the coarse manure in the bottom of the furrow.

When the manure is not spread over the whole of the field as in common cases, and the coarse materials cover a still less portion of it, one person is sufficient to follow the plough. But when a lot is entirely covered with coarse manure, two followers will be required, and even three if the business is not properly arranged. The following regulation will save the labor of one hand, by rendering unnecessary the passing and repassing of the rakers, which the method suggested by our first thoughts would require. The first raker must set in after the plough, and continue his course; when the plough has performed one bout, the second raker begins. The first raker upon completing his round will stop; for he will find the furrow here filled with manure by his companion; but his stop will not be long, for the team will be close upon him, barely allowing time to step aside and permit it to pass; when he again sets in with his rake, or hoe, or fork. In this way the business will be conducted with great regularity and to the best advantage.

When the manure has been thus buried under ground, it is usual to plant corn in the field, that plants may be present to partake of the food which the manure furnishes during its decomposition, and also, to keep the field constantly producing valuable crops. In autumn, after the corn is gathered, the soil is turned over with the plough and, with the assistance of the harrow, the decomposed manure and the soil are well mixed together. The compost is now perfected and the field is in a state of preparation for winter grain.

To this method, it has been objected, that the gases, which first escape during the fermentation of manure, are poisonous to plants, and that their disengagement should be effected, in places where they could not exert their efforts injuriously. The results of several experiments which I have made, would appear to speak a different language from this.

I excavated a spot in my garden, about a foot deep, and filled it half full with clean wheat straw; over this was thrown the soil which had been displaced, and melon seeds were planted. The

fruit was the largest and best I had ever raised. Upon examination, I found that the straw had undergone a thorough decomposition.

Another spot in the garden I trenched, to the depth of two feet, and deposited in it manure from the horse stable six inches deep, and then filled the trench with the soil which had been thrown out. On this bed were sown parsnip seeds; when the roots had attained the size of a goose quill, I dug some of them up. The roots had passed straight down to the manure, and at this depth, which was eighteen inches, they were of two-thirds of their size at the surface; the roots when dug for the table, were rather long than large, and they were excellent.

I excavated another spot in my garden, three feet in diameter, and a foot deep, and threw in fresh manure from the horse stable, without any admixture of straw, to the depth of six inches, after it was pressed down. In the centre of the manure I placed a stake two inches in diameter, and completed the filling up with damp clay well stamped down with a spade. The stake was then withdrawn, and the hole, having the capacity of about a pint, was filled with garden mould; in this were planted two kinds of corn. The stalks of these plants were not large; but, from the first, they preserved a healthy color, and each one produced a fair ear. The particulars of this experiment were so arranged as to cause the gases evolved from the manure, to act with the greatest force on the tender roots of the corn plants as they become developed; and when we consider the effects of the extreme drought which prevailed last summer, and that the roots of these plants were confined to about a pint of fertile earth, it is reasonable to suppose that the manure supplied them with wholesome nourishment, rather than concentrated poison. If coarse manure be but thinly covered over with earth, the soil will be too puffy and dry to produce healthy plants; but I can assert from repeated observations, that the hottest kinds of manure, buried a few inches deep, warm the soil and give additional vigor to vegetation as well in the gardens as in the fields.

MANAGEMENT OF CALVES.

Hyde-Park, Feb. 15, 1835.

Mr. J. Buel—Dear Sir—Having experienced the benefits of correspondence on subjects of Agriculture, and not noticing the subject of raising calves for stock fully explained in the valuable Cultivator—with a hope to promote a better information on the subject, permit me to state the plan we adopt, in which we have been very successful.

E. Holbrook, Esq. can now produce from twenty to thirty calves (raised with little expense,) equal for *age, size, condition* and *fine symmetry*, to any in this country, say pure *Devon*, a cross with *Devon* and *Durham*, and *Devon* and *Alderney*, some of which Mr. Holbrook intends to send to Albany next fall for sale, when I shall feel honored by a personal introduction by Mr. Holbrook.

When the cow has dropped its calf we allow it to suck its mother about seven or nine days, always careful to milk the cow during the time the calf is sucking, to draw off the whole of her milk during this period, in order to promote a large, soft fine bag, during the summer, for the dairy use; at the end of this time the milk comes away freely, of a good color and quality; the calf is then taken from the cow, and with the finger learned to drink, allowing it about four quarts of skimmed milk night and morning. The milk should stand about twelve hours before it is skimmed, increasing till it is six weeks old; from then till ten weeks old, about twelve quarts per day; when ten weeks old diminish the milk for two or three weeks, and increase then from twelve to fourteen weeks. During this period, hay must be placed between split sticks, to invite them to eat, and which very soon gives them what is termed the cud; likewise place small troughs within their reach, containing wheat shorts, turmeric, powdered yellow rosin and salt—the turmeric possessing in a moderate degree an aromatic stimulant—the yellow rosin a weak diuretic; their combination prevents diseases to which calves are subject, swelled legs, yellows, &c.

I must remark, the skimmed milk given to calves, should be boiled, and stand till it cools to the temperature of milk from the cow: it is much better boiled than warm only. Cold milk will cause a calf to purge. If this is the case, put three spoonfuls of rennet into the milk, and it will stop it. If bound, a little pork broth will loosen it. When turned out to pasture, they must be provided with an open dry shed, containing hay, &c. to which they will retire for shelter, from storms, the powerful rays of the sun, or for comforts which nature mysteriously dictates to animals. Symmetry being of great importance, to obtain this, we do not allow them to struggle through the first winter, without care or attention; but provide them with a comfortable dry shed, allowing plenty of good straw for bedding—regularly feeding them with good hay, ruta baga, or small potatoes, with plenty of water ad libitum. We allow to ten calves per day, one and a half bushels of ruta baga, or small potatoes, smashed with a pounder immediately before feeding them, in order that they may not enter their stomach in a frozen state, placing as before, within their reach, turmeric, rosin, &c. of which they will take no more than nature requires. In the summer we turn them out on rough land, the winter following they require only ordinary care. If you think our method worthy attention, or likely to invite the attention of those interested in breeding stock, or the means of improvement on the subject, you are at liberty to insert as you think proper, after correcting errors in expression, &c. &c.

Yours with respect, THO'S MIDFORD.

N. B. In the statement given of our experience in fattening hogs with apple pomace, I forgot to state that the six shoats included in the number, were produced from one of the young sows which was killed, in the statement, making the credit greater than stated. I am fully convinced that apple pomace is as good to make pork as any material I am acquainted with, if managed systematically. It is unreasonable to believe otherwire, when we reflect on the quantity of apples it takes to produce a bushel of pomace, leaving all their solid substance, seeds, which produce an aromatic stimulant, pulp, core and peeling, when cooked with potatoes, &c. &c. and the acidity corrected by eating charcoal, of which they consume considerable. If any correspondent wishes more minute particulars on the subject stated, a line addressed to E. Holbrook, Esq. New-York, proprietor of the estate, will be cheerfully attended to and given; being myself his superintendent or manager of his farm. THO'S MIDFORD.

HINTS TO MOTHERS.

Moreau, 24th of 2d Month, 1835.

I have been gratified by occasionally seeing productions of the female mind inserted in your truly valuable paper. I say gratified, because it is an evidence of the march of improvement. I therefore take the liberty of forwarding to you a compilation from female authors, and if you think them consistent with the plan of your work, and worth attention, they may, perhaps, by publication be serviceable to some of our farmer's wives.

> "There's naught our higher progress does preclude,
> "So much as thinking we're already good."

Very respectfully, &c.
A FARMER'S WIFE.

In the management of domestic concerns, order and method should be observed, and all hurry and confusion ought to be carefully avoided. If we would begin at the right end of the thing, it must be in the morning of the day and in the morning of life; this is an essential point.

Sleep should never be considered as a luxury, but as only a necessary refreshment to invigorate the body and prepare it for further exertions. Therefore the propriety and advantage of early rising should be by example and precept, fixed on the youthful mind.

When these ideas are fixed, and the practice of them becomes habitual, business may be pursued without anxiety, and scolding and hurrying, which tends to irritate the temper, avoided. By pursuing this method, the numerous cares in a farmer's family are rendered easy and agreeable, and to a woman who has been properly instructed, and who has a knowledge of her own concerns, it is a source of peculiar satisfaction to know, that what she requires of her domestics, is consistent with the obligations they are under to her.

The mistress who treats them with mildness and suitable attention, is generally much better served, than she who treats them with harshness and severity. Their love and attachment create a desire to please, and these mutual interests contribute very much to the quietude and happiness of all around.

By this mode of procedure, there is much time for literary pursuits, which are highly important.

It is from the mother, that the early education of children is mostly received. It is the example at home that will educate them; your conversation, the business they see you transact, the likings and dislikings they hear you express; these will educate them, employ what teachers we may. The influence at home will have the mightiest influence in education.

Schoolmasters may cultivate the intellect, but the things done and said at home, are busy agents in forming the character; hence the importance of our families being well regulated; and if a mother would faithfully perform her duty to her offspring, she must be willing to make many sacrifices. The comfort and improvement of her family must be her principal object. Social visiting and virtuous intercourse with those we love, are some of the greatest comforts of life, yet even these must be under such restrictions that nothing may suffer by her absence.

While her children are young, and their minds susceptible of suitable impressions, she should sow the seeds of virtue, benevolence, and all those amiable qualities that will, in riper years, render them honorable and dignified in their pursuits, respectable and useful members of the community, and virtuous and exemplary heads of families.

EXPERIMENTS WITH INDIAN CORN.

Conway, Mass. Feb. 20th, 1835.

MESSRS. EDITORS—I send to you a detailed account of an experiment with regard to the cutting of corn stalks, which I tried last fall, and which you are at liberty to make such use of as you see fit. I went into my field of corn the 15th day of September, and cut in the middle of the piece, four rows ten rods in length. I cut four rows in succession, thinking that the sun would have a better opportunity to ripen the corn where the stalks were cut, than it would if they were cut in alternate rows; and calculating to take at harvest the four rows on the outside for comparison. There were four acres in the piece, and it was planted so that four rows occupied a rod in width, or four feet and an inch and a half from row to row, and meant to average three feet from hill to hill. Thus you see that the whole of my experiment being eight rows, ten rods in length, was equal to 20 square rods of land. When it was ripe, I harvested it, taking the two rows first on the left side, being uncut, and side by side of those that were cut. These for distinction, we will No. 1. I then harvested the two left rows of those on which the stalks were cut; and which we will call No. 2; then the remaining two on which the stalks were cut, which we No. 3; and then those on the right side which were uncut, and called No. 4. The four parcels were all husked and laid away separately in the chamber to dry. At shelling time, the result of the experiment was as follows:—No 1 shelled out 115 lbs. of good hale corn, which gave, it being the 1-32d part of an acre, reckoning 56 lbs. to the bushel, which is lawful weight, 65 bushels and 40 lbs. to the acre. No. 2, shelled out 91 lbs. or 52 bushels to the acre, making a difference of 13 bushels and 40 lbs. to the acre, in favor of those rows where the stalks were not cut. No. 3 shelled 107¼ lbs. or 61 bushels and 24 lbs. to the acre. No. 4, 121½, or 69 bushels and 24 lbs. leaving the difference of only 8 bushels in favor of those rows on which the stalks were cut; thus showing that though rows may be selected which are apparently equal, and side by side, yet the produce will not be the same, as is seen by comparing No. 2 and 3. I forward this to you without note or comment, barely remarking that the land was fitted in the same manner with manure, and selected for the sole purpose of trying the experiment in an impartial manner, and likewise to know the average yield of the piece. The fodder, where the stalks are left to remain till harvest, I consider two-thirds the value of those that are cut when the corn is green. Although this experiment is somewhat unsatisfactory to my own mind, in consequence of the variation in the results, yet still I forward it, hoping if you see fit to publish it, that it will induce others to try the same, and make them public, till it shall be established with a degree of certainty which is the most economical way of cultivating that useful and profitable crop of which we are treating; for if the above results are correct, no farmer can afford to give even eight bushels of corn for an acre of stalks.

For your own encouragement, I would remark that your useful and interesting paper is well received and much valued, by the few who take it in this place, and not only by the practical farmer, but also by some of the ladies, who do not consider it beneath them to take an interest and participate in the enjoyments and advantage which science can render, not only to the culinary, but to the farming art. G. DICKINSON.

Tillage Husbandry.

ON POTATOES.—BY T. A. KNIGHT, ESQ.

In a letter which I published last autumn, I stated that I had obtained a produce of potatoes equivalent to 887¼ bushels and 3 lbs. (each bushel weighing 60 lbs.) per statute acre, and I then expressed an intention which I now fulfil, of pointing out the means by which such an extraordinary crop was obtained, and by which, of course, other crops of equal magnitude may be again obtained; and I look forward with confidence to obtaining in the present year a produce equivalent to 1000 bushels per acre of potatoes of first rate quality.

The first point to which I wish to direct the attention of the cultivator of the potato is, *the age of the variety*; for it has long been known, that *every variety cultivated, gradually becomes debilitated, and loses a large portion of its powers of producing; and I believe that almost every variety now cultivated in this and the adjoining counties has long since passed the period of its age at which it ought to have resigned its place to a successor.*

No variety should ever be cultivated which uselessly expends itself in the production of seeds, nor even of full grown blossoms, unless it possesses some valuable redeeming qualities.

The distance of the intervals between the rows should be regulated wholly by the length required by the stems in each peculiar soil and situation. If the utmost length required by the stems be four feet, let the intervals between the rows be four feet also: and if the variety be of dwarfish habits, and its longest stem does not exceed two feet, intervals of two feet will be sufficient.

The rows should be made from *north to south*, that the mid-day sun may be permitted fully to shine between them, for every particle of living matter found in the tuberous root of the potato plant, has been generated in the leaves, (which act only when exposed to light,) and has descended beneath the soil.

Each set should weigh *at least six ounces*, and they should never be placed at greater distances from each other, than six inches from centre to centre, and a preference should be given to *whole potatoes*, when such can be obtained. If the growth of the plant be very dwarfish, four inches between the sets from centre to centre, will be preferable; and if the form of the potato be long and kidney shaped, a good deal of advantage will be gained by placing them to stand upon their ends, that end which joined the parent plant placed downwards.

The largest produce will generally be obtained from varieties of rather early habits, and rather low stature, there being in very tall plants much time necessarily lost in carrying the nutriment, which has been absorbed from the soil, up into the leaves and down again, in the state of living sap, to the tuber.

Varieties which have strong stems and erect form, are to be preferred, because such are least subject to fall upon, and shade the foliage of each other.

It is much more advantageous to incorporate the manure with the soil by means of the spade or plough, than to put it in with the sets; for in the latter case, a large majority of the roots, during the summer and autumn, do not derive advantage from it.

Early planting is, under almost all circumstances, best; and the period, except for some very peculiar varieties, should never be later than the middle of the month of April.

I possess, though at present in small quantities necessarily, many new varieties, which promise to prove valuable both on account of the quantity and quality of their produce, and I shall be happy as soon as I have the power, to make them useful to the public. I obtained, in the last year, from some of these under culture with the plough, (the soil being shallow, and naturally poor, and manure not having been given, in more than ordinary quantity,) a produce equivalent to more than 650 bushels of potatoes, of first rate excellence per acre, and a good deal larger produce from others of inferior quality, but I have not any reason to believe that I possess any variety which, either in quality for immediate human food, or in quantity for affording food to the inferior animals, has reached, or ever approximated the greatest state of excellence which the potato is capable of acquiring.—*British Farmers' Magazine.*

From the Genesee Farmer.

CULTURE OF BARLEY.

I send the following account of a crop of barley, not that it was a *very* large one, but that it afforded a handsome remuneration for the labor bestowed, and left the ground in beautiful condition for sowing wheat.

Three acres—strong gravelly loam—eastern exposure—year preceding in wheat.

1834, 4 mo. 8th—commenced ploughing—too late by a week.

	Dr.
Ploughing, 3 days, ...12*s*.....	$4 50
Harrowing, before sowing, ½ day, 12*s*.....	0 75
4 mo. 13th—Sowing, ½ day,..... 6*s*.....	0 38
4 mo. 13th—Harrowing, 1 day,..12*s*.....	1 50
4 mo. 14th—Rolling, ½ day,.....12*s*.....	0 75
Seed, 6 bu. 3 pecks, 4*s*.....	3 38
7 mo. 18th—Cutting .....12*s*.....	1 50
7 mo. 22d—Drawing, 2 days, ...12*s*.....	3 00
12 month—Threshing, ...	6 12
Interest on land, at $50 per acre, 4 months,.....	1 16
	$23 04
Cr.—By 122 bushels barley, (by measure,) 4*s*.	$61 00
Nett gain,.....	$37 96

I have not taken the straw in account, though I think it much more valuable than wheat straw.

WILLIAM R. SMITH.

Macedon, 2 mo. 10th, 1835.

Cattle and Sheep Husbandry.

From the New-York Farmer.

Albany, Jan. 27, 1835.

D. K. Minor—Sir—Your favor of the 24th inst. came to hand last evening, soliciting some account of my stock, experience in farming, &c. Now, I would cheerfully comply with your request were my abilities adequate to the task. My experience in farming matters must necessarily be very limited, for I have only had possession of one since April last, and that one was considered none of the best, having been skinned and fleeced to that extent that it would hardly produce half crops. Notwithstanding the situation of the farm, and the lateness at which my crops were necessarily put in, and the excessive drought, still they were tolerably fair. I cut about sixty-five tons of hay on the same ground that only yielded about thirty tons the year previous. This great difference of product I attribute to the free use of plaster. With the aid of plaster and manure, of which I have a plentiful supply, I am in hopes of doing better for the ensuing season.

My cattle suffered very much in the fore part of the summer for the want of shade, as the skinning had even been extended to the trees, for there are only about five small ones left on about eighty acres! After harvest they were turned into my grain stubble, which had received in the spring a plentiful supply of clover and other grass seed designed entirely for pasture with about twenty acres of pine wood, where they improved with astonishing rapidity, notwithstanding the excessive drought the latter part of the season, and went into winter quarters in as good condition as I could wish.

On the first of December I had thirty-one head tied up in my stable, of which twenty-four were of the "Durham Short Horn" breed, consisting of bulls, cows heifers and calves, of various ages, and some of them imported. Since then I have sold one cow and calf, one bull, and two heifers, leaving now on hand nineteen head of the Durham cattle. The others were my working oxen, and one cow and calf of the Polled breed.

Having all my cattle in stables, and chained up separately, it has given me a fair opportunity of testing their qualities in keeping, contrasted with our native breed. The stronger has no advantage over the weaker; each animal gets its allowance. The usual allowance for full grown animals is 1 bushel of cut hay, straw, and corn stalks, mixed with half a bushel of brewers' grains, one half in the morning, and the other half at night, with a little long hay at noon, by way of relish. The smaller animals were fed in proportion to their age and size; and with this feed the Durhams have improved, while the native, (though smaller,) have not held their own. Another circumstance leads to the same result.

A friend of mine wishing to raise a calf from a very superior milker of our native breed, applied in the fall to me to keep her through the winter with my calves, to which I consented. On the first of December she was received at my farm, and put in the stable by the side of my own animals, was fed at the same time, and with the same kind of feed; still she does not grow so fast, and is far behind them in condition and appearance. It is contended by many, that it requires more food to keep the Durham than our native cattle, owing to the greater size, &c. &c. of the former. In answer to this I can only say, such has not been the case with my herd.

I will now, at your request, proceed to give you a description of some of my animals, and begin with

"Carlos," a red and white bull, six years old, got in England by Mr. Whittaker's Charles; dam Galatea, bred by Mr. Whittaker, and got by Frederick, sire of the "Duke of York," lately imported by a company in Ohio, for which they paid £170 sterling in England, and must have cost them about $800 at the Sciota. Carlos is not large, but beautiful; fine in the head and horns; short and clean neck; deep and broad chest; large round barrel; great breadth of loin; small and short in the legs; fine and silky hair, with a soft and mellow skin.

"Superior," a roan bull, three years old, got by Frederick, a son of Wye-Comet, dam Yellow Rose. Superior is not large, but very compact and well made; of fine symmerry and form, straight and fine in the leg, remarkably deep and broad in the chest, deep and heavy carcase, straight in the back, and wide across the hips and loin. His stock, though young, promises well. Great prices for some of his calves, from native cows, have been refused.

"Damon," a red and white bull calf, three months old, got by Superior; dam, imported cow Dulcibella. Damon is a calf of great promise, having in an eminent degree all the good points generally found in calves of his age.

"Dulcibella," white, with some red on her head and neck; eight years old; bred in England by Mr. Whittaker; got by Frederick; dam, Delicia. She is a part of my *capital*, from which I expect large dividends. She is a large animal in a small compass; she is of great length, deep, and round in body, immense breadth across the hips and loins, large and capacious chest, brisket dropping within 15 inches of the ground, straight on the back, short neck, and good head; keeps in good condition, and gives a good mess of very rich milk.

"Dorinda" is white, with a red neck and head; three years old; got by Carlos; dam, Dew Drop; grand-dam, Dulcibella. She is a heifer of good promise, of fine size and form, has had only one calf. A good milker.

"Georgiana," "Delia," "Gertrude," are from ten to eighteen months old; all got by Carlos; and are very superior animals of their age.

The above are all "Herd Book," and high bred animals. My other cattle are all very good, but nothing very peculiar or superior to the others, therefore a description is superfluous.

My swine consists of the "improved China," introduced here by the late Christopher Dunn, Esq., of this city; also, the Berkshire breed, imported and introduced in this vicinity by S. Hawes, Esq., who removed from England, and settled about three miles west of this city. This, I think, is the farmer's hog, for they are of great length, round body, short in the leg, and a little larger bodied, than the China; easy keepers; and may, I am informed, be fatted to 5 or 600 pounds! And though last, not least, is a beautiful sow, eight months old—a combination of all the good points that are required in the hog, being long and round in body, short and small legs, short, small head, with very small upright ears, &c., &c. She is one of three that took the first premium at the Berkshire Agricultural Fair held at Pittsfield in October last. When I applied to the owner to ascertain what particular breed they were of, he said, "*They were the best breed he could find.*" They will attain with ordinary care, at nine months, about 200 lbs., and with a little extra care, 225 to 250 lbs. This sow I intend to cross with my favorite little China.

My sheep are few in number, but some of them very superior, especially the New Leicesters. The others are two South-down bucks, some half blood South-down ewes, &c. &c.

Very respectfully yours,

CALEB N. BEMENT.

Accumulated wealth brings care, and a thirst for increasing riches. He who requires many luxuries, is always in want of many. Happy is he to whom God has given a sufficiency with a sparing hand.—*Horace.*

Man is blind to his own faults, but clear sighted in discerning those of others.—*Phæd.* He quickly sees the "mote in his brother's eye."

He who defers the hour of beginning to live correctly, is like the peasant who waits to have the river flow past; but it continues to flow, and will flow till the end of time.—*Horace.*

Timid dogs bark more violently than they bite.—*Sal.*

Elements of Practical Agriculture,

By David Low, Professor of Agriculture, &c.

DRAINING.

(Continued from page 12.)

Before beginning to drain a field or tract of ground, it is frequently well to ascertain, by examination, the nature of the substances to be dug through.

At the upper part where the wet tract to be drained appears, or between the wet and the dry, let a few pits be dug. The place of each pit is to be marked out nearly in the direction of the proposed line of drain, six feet long by three in width, in which space one man, and if required, two, can work. Let the earth be thrown out to the lower side, and to such a distance from the edge of the pit as not to press upon and break down the sides. Let these pits be cast out to the depth of five or six feet, or more if necessary, so that we may reach, if possible, the porous bed in which the water is contained. Should we find no water, then let us apply to a boring rod, in order to ascertain at what depth the porous substance lies in which the water is contained.

Sometimes water will not be found until we come to a great depth. It may be so deep that we cannot reach it by any drain, or even by boring with the auger. In this case, we are saved the labor of making the drain unnecessarily deep. Sometimes we shall proceed to a considerable depth without finding any appearance of water, when, all at once, by breaking through some thin stratum, we shall reach it. The water is frequently seen, in this case, to boil up like a fountain, and this affords the assurance that we shall succeed in our object.

This species of preparatory examination by means of pits, is therefore, in many cases useful. It affords the means of judging of the proper depth and dimensions of which the drain shall be formed; it prevents the committing of errors in the laying out of the lines of drains; and it enables the drainer to enter into contracts with his workmen with precision.

When we have thus, by sinking pits in various parts of our intended lines, obtained an idea of the nature of the ground, of the substances to be dug through, and of the depth of the water, we mark our lines of drains upon the ground.

This may be done by pins, or by a plough drawing a furrow along the intended line.

It is at this time very convenient to make a hand-sketch of the piece of ground to be drained, marking each line as it is laid off in the field, and noting the depth and direction in which the water is to run.

The lines being marked off in the manner described, these are to form the upper edges of the drains.

The width of the drain at the top depends upon its depth, it being usual, except in the case of very hard and tenacious substances, to make it slope from the top to the bottom. Thus, if it be six feet deep, and from 18 inches to two feet wide at bottom, it may be 2½ feet wide at top.

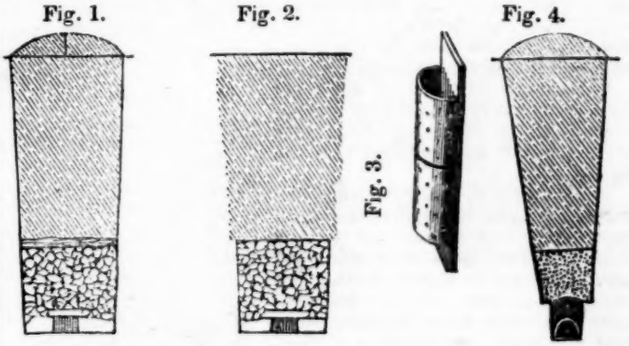
The workman, in forming the trench, works up to the higher ground, and never from the higher ground to the lower. The instruments which he uses in the operation are the common spade, a shovel for throwing out loose substances, a pick or mattock, for raising stones and breaking the earth when hard, and the foot-pick.

The materials to be used for filling the drain may be stones, tiles, or other hard and durable substances. When stones are to be employed, if they are inconveniently large, they may be broken to the weight of three or four pounds. They may be laid down for use, before the cutting of the drain is begun, along the upper line of the drain, the earth being thrown by the workmen to the lower side; or else they may be brought forward while the work is going on, and thrown from the cart into the drain.

In the larger class of drains, it is regarded as beneficial, and even necessary, to form a conduit at the bottom. This is done by building a little wall roughly on each side at the bottom, about 6 inches in height, and so as to leave an aperture or conduit of about 6 inches in width. The workman then covers it with such flat stones as he can procure, filling up also the interstices of these covers with small stones, so as to defend the conduit from earth and other substances that might fall into it. When this is done, the remaining stones are thrown in promiscuously to the height of 18 inches or two feet above the cover. The stones are then to be made level at the top, and either covered with the sod which, on breaking the ground of the drain, had been laid aside for that purpose, or with a covering of straw, heath or the like. The object of this covering is to prevent the loose earth from falling among the stones.

When these operations are completed, the earth which had been thrown out of the trench is shovelled upon the stones until it be above the level of the surface. The object of raising it higher than the surface is to provide for the subsidence of the loose earth, which is generally found to be rendered more compact and to occupy a smaller space than it did in its original state. When a portion of the earth is shovelled, it is an economy of labor to employ a common plough for filling in the remainder.

Fig. 1. Fig. 2. Fig. 3. Fig. 4.



A drain thus formed will appear on a transverse section, as in fig. 1, and after the subsidence of the earth, as in fig. 2. Where the soil is very soft, it is of benefit to pave the lower part of the drain with stones or slates. In the whole operation of forming the trench and conduit, great care is necessary in seeing that all the parts of the work are executed well.

The stones used for this species of drain may be sandstone, or any of the harder stones that can be obtained. But in many cases, stones are not to be obtained, in which case tile may be substituted.

The tiles, which are made with an arch, as in figure 3, may be formed of separate pieces of about 14 inches in length. Flat soles are made of the same materials, on which the arched tiles are to rest.

The method of forming the drain when tiles are the material employed, is somewhat different from that adopted when stones are used.

The drain is carried down as narrow as a man can work, and at the bottom an excavation is made by means of a narrowmouthed spade, to fit the dimensions of the tile, which is then placed upon its stand or sole. Above this, should be laid some loose materials, as clean gravel or sand, for allowing the filtration of the water. Even brushwood and such materials, may be used. for, though they are not of great durability, they serve the purpose, even after they have decayed, of rendering the earth more open and pervious to water.

Drains formed in this manner, whether the material employed be stone or tile, will be found efficient when they are laid out in the proper direction, and when the pervious substances are reached in which the water is contained.

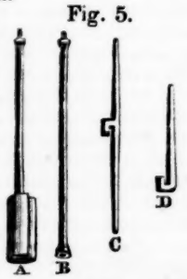
But it is often impracticable to reach these substances with a drain of common depth. In this case, apertures may be formed at the bottom of the drain, by boring or sinking down at the proper distances, until the pervious beds in which the water is contained are reached. By this mean, the water will be allowed to flow up

from below into the cavity of the drain, and so will be carried away.

The application of this principle had been familiar from the remotest times in the sinking of wells. But it was not till after the middle of the last century that the same principle was applied to the draining of land. This was done by Mr. Elkington of Warwickshire, who employed the auger and the boring-rod for the purpose of reaching the channels and resorvoirs below the surface, when an ordinary drain could not reach them.

The auger employed for this purpose, is similar to a carpenter's wimble. It may be from 4 to 5 inches in diameter. Square iron rods are made to be screwed into each other, so that the length of the line of rods may be increased in proportion as the auger penetrates the ground. In the annexed figure, A is the auger, B one of the rods, C a key for turning it round and working it, D another key for holding the rods when they are to be unscrewed by means of the key C.

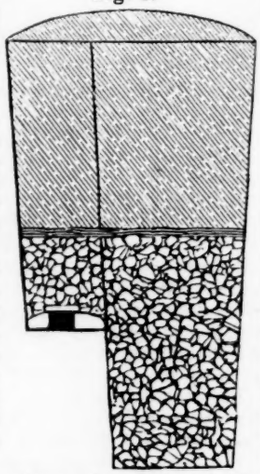
Fig. 5.



This instrument may be frequently found useful when the channels and reservoirs of water can be reached in this manner. The apertures are formed by the auger in the bottom of the drain. When the water is reached, it will spring up into the drain in the same manner as water in the bottom of a well. It is not necessary to employ any artificial means for keeping the apertures open, as the flow of the water will suffice to maintain for itself a passage.

Sometimes, in place of an auger hole, wells are sunk at intervals along the side of the drain, and filled with stones in the manner shown in the figure.

Fig. 6.



In all cases of under draining, the drains should be made of sufficient dimensions. They should not be less than four feet deep, even when the pervious strata lie at less depth; and the reason is, that they may be more permanent, and better defended from mud and sand, carried down by surface water. It is not necessary that they be made deeper than four feet, when that is found to be sufficient; but they must be carried, if necessary, to the depth of six feet, or even sometimes of seven feet, though the expense and difficulty of executing the work increase, in a great proportion, as the dimensions of the drain increase.

The importance, in this species of draining, of proceeding upon principles in laying out the lines of drains, instead of acting at random, as so many do, cannot be too strongly impressed upon the attention of the drainer. Every drain, however rudely devised, and imperfectly executed, may do some good. But one drain well laid out, and of the required dimensions, may perform a purpose which no multiplication of minor and insufficient drains can effect.—These may lessen the effects of wetness, but the other is designed to remove the causes of it; and the more perfect practice will usually be found in the end to be the most economical as well as the most efficient.

The drains of the larger class described, it will be seen, are intended solely for the removal of water which is contained in reservoirs and channels below the surface. They do not supercede the necessity of carrying away water which is at or near the surface. From this latter cause, an equal or greater injury may arise, and must be met by a corresponding remedy.

Surface-water may be carried away either in open drains, or in covered trenches.

The open drains are—the ditches of fields, which ought to be so laid out as to favor the descent of water—the open furrows which are formed by the ridges—and open trenches cut in the places necessary for allowing a passage for the water.

In the forming of open trenches, the dimensions must be fixed with relation to the quantity of water to be carried away, and the direction determined by the natural flow of the water, or by the particular course by which it is expedient to carry it off. In general, open drains are formed in the hollows or lower parts of the land to be drained, so that the water may find access to them from the higher grounds.

In forming open drains of whatever depth, the sides should possess a declivity from the bottom to the top, to prevent them from crumbling down and being undermined. Except in the case of rock, this inclination should not be less than 45°; and when the earth is soft, and the flow of water considerable, it should exceed 45. In all cases, the earth should be spread from the edge of the trench backwards, so that the water from the lands on each side may have access to it.

The next class of surface drains consists of covered trenches. These are formed in the same manner as the larger drains already described, with this difference, that no conduit is required, and that they need not be of the same depth and capacity. They may generally consist of a small trench, from 2½ to 3 feet deep, filled with stones or other loose materials, to within a foot of the surface, so that there may be a sufficient passage for the plough above.

These drains are generally carried through hollow places where water may stagnate, or obliquely along the line of descent, and sometimes in regular lines along the surface of flat lands.

When the soil rests on a subsoil of considerable depth, the water that falls upon the surface is unable to penetrate freely down, and is absorbed and retained by the soil and upper part of the subsoil. The object in such a case is to give a ready egress to the water with which the soil is saturated, which will be done by forming for it various channels towards some convenient outlet. A good arrangement of ridges and furrows will sometimes of itself effect this purpose; but as the water constantly tends to sink below the level of the furrows, drains may become necessary to assist in carrying it away.

A system of draining having relation to this condition of the soil and subsoil, has been termed the Essex system, from its having been extensively practised in that flat and clayey district. This system consists in running small drains parallel to each other in every furrow or alternate furrow. The object of this species of draining is not to intercept springs flowing in channels and pervious strata below the surface, but to convey away that water from the surface which, from the tenacity of the soil and subsoil, cannot find its way downwards.

The best materials to be used in this species of draining is tiles, formed into a semi-cylinder or arch, and resting upon a flat sole, fig. 3. The diameter of the semi-cylinder may be from three to four inches. The tiles are to be placed on their stands in the bottom of the trench. The water finds its way into the arched conduit thus formed at the crevices formed by the junction of the tiles. Sometimes, in addition, are formed through them small holes, so that the water may more readily find its way into the conduit.

The trench for the reception of the tiles may be from 18 inches to 2 feet deep. The tiles may be covered, first with the sod inverted, when there is any sod upon the surface at the time of draining, second with the looser soil next the surface, and lastly with the more tenacious subsoil. But it is always an improvement in the case of this kind of drains, to lay over the tiles some gravel, sand, or other pervious matter, before shovelling in the earth.

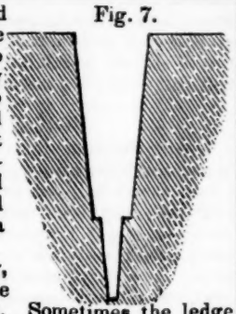
Drains of this kind, when properly made, and when the tiles are good, will last for a considerable time. When choked at any particular part, they can be easily taken up at that part, and the tiles replaced, or new ones substituted.

Though this species of draining is well suited to particular cases, great care should be taken that it is not applied under circumstances to which it is not suited. When employed where under-draining is the proper remedy, it is neither so durable nor efficient as the system of larger drains, formed upon correct principles.

Thorns, brushwood and branches, are frequently employed in the filling of drains. They serve the purpose of affording a more pervious channel to water, but they soon decay, and the drains are very apt to be choked. Sometimes, indeed, the channels formed by the water remain, when there is a considerable current, long after these materials have decayed. But this cannot be depended upon, and such materials, therefore, ought not to be used if better can be obtained.

Sometimes a species of draining termed wedge-draining, has been employed. The general method of performing this is to form a narrow trench with a long narrow shovel. The spit being taken out as deep as the shovel can go, a scoop is employed to clear out the mud and loose earth at the bottom. Then another shovel corresponding with the first is used, and a second spit taken out, and then a narrower shovel still to clear the whole out—forming a trench with a ledge, as in figure 7.

Fig. 7.



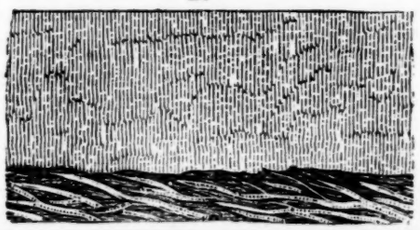
A piece of sod with the grass side below, is then forced down, and resting upon the ledge, a space is left for the water below. Sometimes the ledge is dispensed with, and the sod is merely formed into a wedge, narrowed towards the grassy side, and this, when the little trench is cleared out is pressed into it and covered with earth; and as it does not reach the narrow bottom, a channel remains below, through which the water percolates.*

This simple species of drain has been extensively adopted in some districts; and as it is easily formed, and as the number of drains may be multiplied at little expense, considerable benefit has resulted from the use of it. But although drains of this kind will remain open for a considerable time, yet they are exceedingly apt to be closed up; on which account, the use of tile is in most cases to be preferred.

* There are two other materials for under-draining which we have employed, for want of stones, both equal if not superior, to sod, viz: brush-wood and straw. For brush-wood, the trench may be made like fig. 1, 18 or 24 inches wide, and three or four feet deep. The brush we have used, have been pine saplings, from two to six inches at the but. They are cut into lengths of four or five feet, and commencing at the upper end, placed diaganolly in the trench, the buts down and towards the outlet. When completed, the ditch is apparently full. The brush is then all brought within the edges of the ditch, well trod down, and the earth thrown in. Bundles of faggots are sometimes employed. When straw is to be used, the ditch is made to conform to figure 7. The lower part is cut by a spade, ten inches long, three broad at top, and one inch at bottom, and the loose dirt carefully removed with a scraper, which we may hereafter give a figure of; the straw being twisted into ropes, is then pressed gently with a spade into the narrow cut, the sod placed over it, and the earth thrown in. A side view of a brush drain is shown in the annexed cuts; A. shows the form of placing the brush, and B. its position after the trench is filled with the earth. In both cases, the sides of the main trench may be cut perpendicular.—*Cond. Cult.*

A.

B.



Miscellaneous.

Extract from the Address of Mr. S. Blydenburgh, read at the annual meeting of the Rensselaer County Agricultural Society, October 7, 1834.

Science and art, which were designed by Nature as twin sisters, for the mutual benefit and support of each other, have been from time immemorial alienated and estranged by the artifices of designing men. But, thank Heaven! they are becoming happily reconciled. Science, tired of spinning hypothetical cobwebs in secret, has at length found out that she is indebted to her long despised sister, not only for the common comforts of life, but even for the instruments with which she makes her discoveries; and *Art*, finding herself no longer insulted, instead of groping in darkness, as heretofore, is now making rapid advances in the perfection of her labors, as she pursues them by the light of science. Every branch of the useful arts is now assuming an improved character, as it begins to be conducted on scientific principles; but in no branch whatever is the knowledge of those principles of more importance than in agriculture.

The same overbearing spirit, which has heretofore monopolized all the honors, all the respectability, and most of the wealth, has endeavored, and still endeavors, to claim all the learning. We have two or three professions, which, however necessary, (and I have no disposition to question either their usefulness or their respectability,) cannot produce a single article even for their own subsistance, but which are with great emphasis styled the *learned* professions; while the farmer who feeds them, and who furnishes the materials to clothe them, is in grateful return greeted by the sweet sounding appellation of clodhopper. There can be no shadow of objection to giving learning to the man who labors for our spiritual good —to the lawyer, who settles our temporal disputes—or to the physician, who heals our maladies. But why, in the name of common sense, is it not equally necessary for the farmer? I would not dispute with either of these learned professions for the monopoly of the dead languages, but for the ever-living natural sciences—for mathematics, mechanics, chemistry, botany, zoology, and their subordinate branches. I contend that where the clergyman, or the lawyer, has one professional occasion for their use, the farmer has fifty. By botany and chemistry, he learns the physiology of his plants, the nourishment and treatment they require; and, by analyzing his soil, he discovers what is necessary to maintain and increase its fertility, Zoology and natural history teach him the characters and constitution of his animals; and mechanics, the structure and use of his implements. In short, his whole business of life is a series of illustrations of the principles of science, and his whole establishment is a scientific laboratory.

May we not confidently hope that the worthy gentlemen of these learned professions will at some day be willing to admit the scientific farmer to an equal rank in the scale of being with themselves? But the number thus favored, however, must, for some time to come, remain very limited, for though we have colleges of distinguished reputation dispersed throughout the country, yet the course of education they pursue is of too abstract a nature to be of any essential service to the interest of agriculture. There can be no doubt that those who have no faith in book farming will smile at the idea of a college-learnt farmer. But how many things have been smiled at as ridiculous at one period, and at a subsequent period hailed and applauded as wonderful improvements? We have theological seminaries, and medical seminaries, and law seminaries, and military seminaries, and each endowed with splendid and costly libraries, and all the paraphernalia of scientific illustration and experiment, and furnished with able teachers, liberally supported. But poor agriculture whose hand sows the seed, and whose arm gathers the harvest and the vintage, on which our earthly comforts and even our very existence depend, she can have no seminary in which to teach her sons the most valuable of all arts. No matter—they are nothing but clod-hoppers; if they can learn their letters and read the bible, what more can they want to know? Even our wise legislatures can grant supplies for literary and other public institutions with a liberality which does them great credit, but touch the string of agriculture, and it refuses to vibrate; the whole instrument seems paralyzed and makes no music.

But let me entreat the friends of agricultural improvement still to persevere, notwithstanding all these discouraging circumstances. Let the disciples of the old school ridicule *book* farming and laugh at the idea of an agricultural college, or of schools to teach the farmer how to hoe his corn. As I have already stated, the spirit of improvement is awake! Our State legislature already has the subject before it, and the agricultural society of the State will doubtless pursue it with persevering attention. It is true, we cannot have the credit of setting the example and leading the way. Such institutions are already established, and are producing most happy results in several parts of Europe; and young men are attending them even from this country. Let us then have the praise of setting the example in our own country, and let this State take

the lead of all the others. Where is the man of so much apathy as not to be cheered with the anticipation of beholding such an institution: an extensive and handsome edifice, where our young men shall be taught, in theory and in practice, those immutable principles of nature which form the only infallible guide to all the substantial comforts of life! Where, by mingling the useful with the sweet, they will become inured to habits of industry; where science and art shall combine to inspire them with laudable emulation to excel each other! if we are charmed with viewing a garden, upon a small scale, the work perhaps of a single, but skilful individual, how infinitely more charming must be the view of three or four hundred acres, planned and laid out with all the accumulated skill of ages, aided by all the lights which science has thrown on the subject, with all the b auties of the vegetable world, and all that is useful of the animal! Could any earthly prospect be more delightful? I answer, yes; that of two hundred young men, vying with each other, in skill and industry, not only in improving and beautifying the establishment, but in improving their minds by study and their bodies by manly labor, infinitely more pleasing and more to their credit than the mountebank feats of a gymnasium; thus fitting themselves as brilliant lights to guide, instruct, and adorn the succeeding generation.

This view of the subject, or rather the subject itself, far surpassing any picture I can draw of it, will soon become reality, if those interested in its progress do their duty; and that they will do their duty, the talent and integrity already engaged are sufficient guarantee. Let this state set the example, and all the other states will imitate it. And what will hinder the same from taking place in every county? Should one county lead the way, there can be no doubt but all the others will follow. But the county institutions will of course be small, compared with that of the state. One hundred acres of good land, with other suitable investments, might be sufficient; and what mighty thing would the cost of a hundred acres of land and a little expense in buildings and apparatus be for this county? There is abundant reason to believe that such an institution in each county would be an immediate source of pecuniary profit, independently of all its other advantages. But the state institution must necessarily lead the way. That institution, then, as the parent or head, would furnish teachers for all the others, and it would also furnish seeds, plants, and animals, of every description; and as it would be foremost in all untrodden ground, it would protect the county institutions from all loss in new and untried experiments, and afford a pattern for them to follow in all their operations. The state could afford expenses in books and apparatus, as well as in the introduction and acclimation of rare and valuable exotic plants; and also in procuring valuable and extraordinary animals, which would be altogether beyond the reasonable means of a county, much more so of an individual; and yet these valuable acquisitions would be less so, either to the county or the individual, because they cost comparatively nothing. There are probably more than a hundred thousand respectable farmers in this state. Many of these have been at very considerable expense to introduce some valuable breed of animals, or even the seed of some extraordinary vegetable. Now, suppose the expense so incurred should, in some cases, be a hundred dollars,—and it has been in many cases much more; this would be a heavy tax for an individual; but divide this tax among the hundred thousand farmers, and it amounts to one mill a piece. And suppose this introduction were effected by the United States, the expense to individuals would be still less; the liability to imposition would be also less; and the chance of its being distributed over the states, and consequently the public thereby benefitted, still greater.

Let this parent, or state agricultural school be attended as it would be, and as I venture to say it will shortly be, by pupils from each of the counties, each of whom will be an interested respresentative of his own county; and let each county have, as there is reason to hope it will have, a school after the same model, but upon a smaller scale; and when this system shall even begin to be in full operation, how abundant will be its benefits to every farmer in the state, as well to those who have not, as to those who have been its pupils. If any new and valuable production is introduced, as fast as the course of nature will suffer it to multiply it will, of course, be distributed for the benefit of the whole. Are new agricultural implements invented, here their comparitive merits will be tested; and if, upon fair experiment, found not good, they will be condemned, without suffering individuals to be imposed upon. Here, also, every farmer in the county may, without much expense, go and view the operations and improvements himself, and not listen to stories which he as no faith in, or read books on the subject which he does not understand.

BOILED FOOD FOR CATTLE.

Having for some years turned my attention to the most economical and profitable mode of fattening cattle and especially hogs, I have found that preparing their food by the process of boiling is unquestionably the greatest improvement that has yet been discovered—a slight fermentation following previously to feeding it away as certainly adds to the capacity of food for affording nutrition. And I have also further fully ascertained, that the nutritive qualities of many species of food can *only* be obtained by boiling, and in many others is only fully developed, or prepared for the action of the stomach by that procees.

The Irish potato furnishes a case in point of the first kind, and the apple of the last. It is extremely rare that you will find a hog that will eat a *raw* Irish potato, but put it through a culinary process and it is rare to find one that will refuse them.

Boil the apples, let them get cold, and feed them to the hogs, and you will double their capacity for producing flesh.

But, sir, the result of fairly conducted experiment has equally convinced me that the mixing of different kinds of food, adds prodigiously to the capacity of the different materials for affording nutrition, from the effect of combination. The increase of the quantity of food, as well as the addition to its nutritive quality, by the simple absorption of water in the act of boiling, is familiar to all well informed persons. But I am assured that the combination of different materials, produces a greater mass of nutritive matter, than the whole could separately yield; and that to find out the art of mixing food, along with the best mode of preparing it for the action of the stomach, is the great art of feeding economically, and I believe to secure animal flesh, health and vigor.

The late improved mode of keeping up in flesh working horses in England, by the admixture of food, may be cited as a corroborating proof in point. It is now I think rendered certain that the combination of two articles of food, produces a new nutritive matter, more effectual than either could separately, or that could be produced from the nutritive matter contained in each fed separately. Boil Irish potatoes, pumpkins and apples; combine them by mashing together, and add a little salt, and it will be found most nutritive food for hogs, producing flesh rapidly. Now a hog on Irish potatoes raw, would starve to death, and do little better confined to pumpkins; on raw apples he would live tolerably; on the boiled and combined he fattens kindly and rapidly.

The result with me has become an anxious desire to ascertain the simplest and most economical mode of steam boiling food on a large scale, say pumpkins, potatoes, &c. Some of your readers may have seen, or be in possession of some plan not generally known, and valuable.

I have no hesitation in saving that the individual whose talents would devise some plan, which would come within the reach of every description of planters, uniting economy in the expenditure of capital, with despatch, would confer a solid benefit on our country.—*Southern Planter.*

From the Genesee Farmer.

THINGS A FARMER SHOULD NOT DO.

A farmer shou'd never undertake to cultivate more land than he can do thorougly—half tilled land is growing poorer—well tilled land is constantly improving.

A farmer should never keep more cattle, horses, sheep or hogs, than he can keep in good order; an animal in high order the first of December, is already half wintered.

A farmer should never depend on his neighbor for what he can, by care and good management, produce on his own farm; he should never beg fruit while he can plant trees, or borrow tools while he can make or buy; a high authority has said, the borrower is a servant to the lender.

The farmer should never be so immersed in political matters, as to forget to sow his wheat, dig his potatoes, and bank up his cellar; nor should he be so inattentive to them as to remain ignorant of those great questions of national and state policy which will always agitate more or less a free people.

A farmer should shun the doors of a bank, as he would an approach

of the plague or cholera; banks are for men of speculation, and theirs is a business with which farmers should have little to do.

A farmer should never be ashamed of his calling; we know that no man can be entirely independent, yet the farmer should remember that if any one can be said to possess that enviable distinction, he is the man.

No farmer should allow the reproach of neglecting education to lie against himself or family; if knowledge is power, the beginning of it should be early and deeply laid in the district school.

A farmer should never use ardent spirit as a drink; if, while undergoing severe fatigue, and the hard labors of the summer, he would enjoy robust health, let him be temperate in all things.

A farmer never should refuse a fair price for any thing he wishes to sell. We have known a man who had several hundred bushels of wheat to dispose of, refuse 8s. because he wanted 8s. 6d., and after keeping his wheat six months, was glad to get 6s. 6d. for it.

A farmer should never allow his wood-house to be emptied of wood during the summer months; if he does, when winter comes, in addition to cold fingers, he must expect to encounter the chilling looks of his wife, and perhaps be compelled, in a series of lectures, to learn. that the man who burns green wood has not mastered the A B C of domestic economy.

A farmer should never allow his windows to be filled with red cloaks, tattered coats, and old hats; if he does, he will most assuredly acquire the reputation of a man who tarries long at the whiskey, leaving his wife and children to freeze or starve at home.

There are three things of which the man who aims at the character of a prosperous farmer will never be niggardly, manure, tillage and seed; and there are three things of which he never will be too liberal, promises, time and credit. W. G.

CHAPTER OF FACTS.—MEASURES OF CAPACITY.

Measure is length, breadth and thickness, estimated by known lengths, or compared by other known quantities; thus, there are 12+12+12=1,728 cubic inches in a cubic foot, and 3+3+3=27 cubic feet in a cubic yard.

The imperial gallon is 277.274 cubic inches. A gill, or quarter of a pint, is 8¾ inches.

The imperial gallon contains 10 lb. avordupois, of distilled water, weighing in air, at 62°, with the barometer at 30 inches. Two gallons, a peck—eight a bushel, and eight bushels a quarter.

Heaped measure, per bushel, is 2815¼ cubic inches clear.

The Winchester bushel is 18½ inches in diameter, and 8 inches deep, containing 2154.42 cubic inches.

1,000 ounces of rain water are equal to about 7½ gallons wine measure, or, to a cubic foot.

7 pounds avordupois is a gallon of flour.

A chaldron of coals is 58¾ cubic feet.

Twelve wide gallons of distilled water, weigh 100 lbs. advordupois.

A cubic inch of distilled water at 62°, in a vacum, is 252.274 grains.

The imperial dry bushel, when not heaped, is 2218.192 cubic inches; the peck 554.584; gallon 277.274, and quart 69.3185. The bushel is 8 inches deep, and 18.8 wide, with a heap 6 inches high.

A bushel of wheat is 60 lbs.—rye 53 lbs.—barley 47—oats 38—peas 61—beans 63—clover seed 68—rape 48 lbs.

A Scotch pint is equal to four English pints.

A Scotch quart is 208.6 cubic inches.

There are 545,267,000 cubical yards in a cubic mile.

Hogs.—The dealers in this article have generally returned, and we believe, without a solitary exception, have made money. This fortunate state of the market will throw a considerable sum of money into circulation in Kentucky. We are informed 60,000 hogs have passed the Kenhawa route, 82,000 through the Cumberland Gap, and about 40,000 through Tennessee to Georgia and Alabama, making, in the aggregate ,182,000 head. Suppose half this, number to have been slaughtered and packed for N. Orleans market, and we have the grand total of 273,000 head taken from Kentucky this season. This number of hogs, supposing them to average 200 lbs. nett, and supposing the New-Orleans market equal to the other markets, will furnish the handsome sum of *two million seven hundred and thirty thousand dollars.* From the best information we have on the subject, we are inclined to believe our calculations nearly correct. What sum has probably been realized from the sale of horses, mules, beef cattle, we have no data for calculation.—*Kentucky Chronicle.*

GOOD POINTS IN FARMING.

The Massachusetts Agricultural Society have awarded a premium of $100, to Mr. Amos Sheldon, of Beverly, for the best farm offered for premium. The committee enumerate the following *seven* points, for which Mr. S. deserves commendation, and add several others, perhaps equally important, in which his statement is defective. The report is given at length in the New-England Farmer.

1. For having this farm so divided into pieces as probably to make all temporary division fences unnecessary.
2. For draining and reclaiming low or meadow lands.
3. For renovating old pastures by ploughing and sowing down anew with grass seed.
4. For having the food for his cattle prepared by cutting and mixing the hay, &c. with grain and vegetables.
5. For his care in collecting manure, and making a liberal and judicious use of it on his farm.
6. For having, by good management, gotten so much produce from his farm in 1834, with so few laborers.
7. For the small quantity of ardent spirits which he permitted to be consumed, compared to former times by his laborers—an entire abstinence from which, would have a fine moral effect.

On the other hand, Mr. Sheldon's operations as a farmer, taken together, do not come up to the full expectation or wishes of the Trustees. It was hardly to be expected indeed from one whose cares are so divided as his are. It would have been well if he had attended to and stated with some precision, the advantages of a rotation of crops, so far as his experience extends. If he had attended to the cultivation of vegetables, as food for his stock in addition to potatoes, such as mangel wurzel, carrots, ruta baga, common turnips, &c.

If he had made some experiments in ploughing in green crops, as a manure, and given the result. If he had been much more liberal in the use of grass seed. If he had shown more interest in respect to orcharding and fruits of various kinds. If he had turned his mind more to the breeds of stock, &c. &c.

It has been a leading object of the Trustees, in offering these handsome premiums on farms, to bring about something like method in our agricultural operations. In the mechanic and manufacturing arts—in all the sciences—discoveries and improvements are constantly making—and why not in those most important of all arts, agriculture and horticulture, on which all others so essentially depend? Why should not our industrious and sensible cultivators make experiments of no great hazard or expense, and preserve a record, not only of their success, but what would be quite useful to know, *their failures?* Why not endeavor to learn so much of the nature and uses of different soils as to determine what course will probably be the best as to a rotation of crops, and in the different use of manures, and in improving one soil with a mixture of another? Why not keep a diary to which they might turn at any time, and compare one season with another as regards heat and cold, rain and sunshine—the times of planting and harvesting and the many occurrences of the year?

BOTS IN HORSES.

Mr. EDITOR—I have read your articles in the Farmer under this head, and though the sentiments are quite discordant with common opinions on this subject, still I have no disposition to attempt their refutation. I have a remedy which I have seen applied in a number of cases of what were called bots, with complete success. The prescription is as follows: Mix in a convenient bottle, one pint of good vinegar and a half a pint of good ashes. The horse should be previously prepared to receive the dose immediately on mixing it, as the effervescene produced by the acid of the vinegar and the alkali of the ashes, will render it difficult to retain the compound many minutes after mixing. From one to three bottles will, I think, in all cases be found sufficient. I have known this medicine administered to horses apparently in the last stage of the disease, and have never known it to fail of producing relief in less than ten minutes. The ashes should be sifted.—*Genesee Farmer.*

Young Men's Department.

Lectures on Self-Instruction, delivered before the Young Men's Association in Albany, by J. Buel.

When the husbandman has prepared his ground, and deposited his seed, his work is but well begun. Were he to stop here, he would be but illy compensated for his labor. He must watch the germination of the seed, nurture the young plants, and eradicate all noxious weeds—he must practise unceasing vigilance and industry, if he would realize the full fruition of the harvest. So with the young mind, which has received the advantages of school education, and been imbued with the seeds of knowledge. It is but *prepared* for useful culture—the main labor is yet to be performed; the experience and maxims of the good and wise are to be brought to its aid; the virtues are to be sedulously fostered; bad habits and propenstities are to be guarded against or subdued, and industry and vigilance unremittingly exercised, if we would have it attain to fame and happiness, the great incentives to action, and the grand pursuits of life. The foundation has been laid in the school, but the individual himself must rear the superstructure. The soil has been prepared and the seed sown, but to him is confided the care of the crop:—to him it is left to decide, whether the edifice shall be a hovel or a mansion; and whether the increase of the seed shall be two-fold, or an hundred fold. It is true, that intellects, like soils, differ very much in fertillity; yet good culture seldom fails to remedy the seeming defects in both, if duly persisted in. Persevering application, with the aid which the example of others always furnishes, has a magic power in surmounting difficulties, of calling into action inert faculties, and of directing them to purposes of usefulness. The field, and even the highly prepared garden, without what is termed *after culture*, will soon be overrun with weeds, brambles and thorns,—its prospects of beauty and usefulness obscured, and the hopes of its owner will end in disappointment and chagrin. Without the after culture, in like manner, the young mind is wont to run wild, to become shrouded with menial passions, and to disappoint the hopes of solicitous friends. It would seem to be a wise provision of Providence, that our prosperity and happiness are made in a good measure to depend upon vigilance and industry; or rather, that the lively exercise of these qualities, under the guidance of correct principles, should receive a certain reward.

To the young, self-instruction offers the most certain means of obtaining the distinctions and enjoyments which constitute the great aim of life. Wealth is held by a precarious tenure at best. The elements may destroy, or unforeseen misfortunes wrest it from us. The habits it begets are also calculated to render its possession transitory. Instead of exciting to active exercise, the mental powers, it too often relaxes exertion, and lures to a disreputable lethargy, both body and mind. Friends upon whom the young too often repose for the means of success in life, are mortal, and changeable in their affections, and dependence upon their favors is precarious, and often humiliating. Friends, besides, are generally found most willing to help those who stand least in need of their assistance,—those who are able and determined to help themselves. And as for distinction of birth, what is it? An artificial eminence, which renders ignorance more conspicuous, and folly more alluring. It seldom makes men more learned or more virtuous. But knowledge is useful, not only as constituting capital in our particular business, but as a means of enabling us to fulfil our public duties with more usefulness, and as constituting a main source of our intellectual enjoyments. Knowledge is power—it is independence, a treasure which one cannot be beguiled of—and which even the process of law respects—a friend which will not forsake us. It is a property which distinguishes the savage from the brute;—an acquirement which elevate civilized, above savage life; a quality which marks the grades in society; and a community is ever ranked in the scale of improvement according to the measure of useful knowledge which it possesses.

Self-instruction not only affords the means of bettering our individual condition, but it teaches and stimulates us to perform the high duties we owe to God and to society. It not only serves to multiply our personal enjoyments, and to benefit those who are immediately dependent upon us, but it enables us to add to the stock of general happiness. The man who makes a useful discovery in science, who improves the condition of a useful art, or who renders the earth more prolific in supplies for the sustenance of man, is in a measure a public benefactor. What are all the improvements, the comforts, and enjoyments which we possess, over the savage tribes who roam our western wilds, but blessings and refinements which have grown out of self-instruction—and mostly of men, too, in the middle or lower classes of society. Such, in our country, were a Franklin, a Fulton, a Sherman, a Whitney, a Rittenhouse, an Evans, and a host of others, all in humble life, who were in a manner self-taught, and who have conferred important benefits on mankind; and even our Washington never enjoyed the advantages of any but a domestic and scanty education. Yet how greatly are we indebted to these self-taught men, for the distinguished privileges which we enjoy as a nation and as individuals.

The poet has said, that

"Man may be happy if he will."

This, however, must be received with poetic qualifications. No one can expect to avert the afflictions to which we are incident by nature; nor would it be well for him if he could; for these often come upon us, like parental chastisements, as blessings in disguise. But he *can* avert most of the evils which are born of his follies and his vices. A little reflection, aided by a notice of what is passing around him, will teach any discreet man, that if he would enjoy health of body, and vigor of mind, he must be temperate in the indulgence of his appetites, and be active and stirring in his employments; that if he would acquire wealth, or retain that which is conferred upon him, he must be industrious and frugal in his habits; and that if he would obtain the substantial distinctions of life, he must first merit them, by storing his mind with useful knowledge, and practising those virtues which command the applause of good men. It will not do to temporize in these matters—to put on our good habits, as we do our Sunday clothes—merely out of respect to others, or for ostentatious show; they must be abiding, every day wear, and adopted from a consciousness that they best become us, and are most conducive to rational enjoyment. I have some where seen it remarked, that the vices are intuitive, while the virtues have to be *learnt:* or, to employ a rural illustration, that the virtues are exotics and require constant care to induce them to develope all their natural beauty and fragrance; while the vices are of indigenous growth, like the weeds of our gardens, which will soon acquire and maintain the ascendency, if they are not carefully extirpated or smothered.

Self-instruction is not only productive of positive good to individuals and to society, but it serves to lesson the measure of positive evils. Neither the mind or the body are long at rest, and if they are not usefully employed, they are too apt to seek indulgence in pursuits that are trivial or directly evil; and what is frequently indulged in, soon becomes habit, which it is extremely difficult to overcome, though we are sensible of its pernicious tendency. The mind that delights in study, is never driven to seek pleasure in the haunts of dissipation: *it can be happy alone.* The wonderful works of creation, and the history of man afford ample matter for study, for reflection and research; and as we ascend the heights of knowledge, every step we advance enlarges the sphere of our vision, the beauty of the prospect, and the measure of our enjoyment. "Next to the fear of God, implanted in the heart," says a distinguished writer, "nothing is a better safeguard to character, than the love of good books. They are the handmaids of virtue and religion. They quicken our sense of duty, unfold our responsibilities, strengthen our principles, confirm our habits, inspire in us the love of what is right and useful, and teach us how to look with disgust, upon what is low, and grovelling and vicious. No man who has a fondness for reading, is in much danger of becoming vicious. He is secured from a thousand temptations to which he would be otherwise be exposed. He enjoys the sweetest, the purest, the most improving society, the society of the wise, the great, and the good, and while he holds delightful converse with those, his companions and friends, he grows into a likeness to them, and learns to look down, as from an eminence of purity and light, upon the low born pleasures of the dissipated and the profligate.*"

The common avocations of life do not prevent the acquisition of useful knowledge. Not a week, and scarcely a day passes, that does not afford hours of exemption, from ordinary business, which may be employed in improving the mind; and these hours amount to years in the aggregate of ordinary life. Labor does not unfit

* Hawes' Lectures.

the mind for study, but rather imparts a freshness and a relish for it, which is seldom experienced by the indolent or the sedentary; while study serves to beguile the tedium of labor, by the interesting matters it furnishes to the mind for investigation and reflection, and which the mind may adapt to the useful purposes of life. While labor tends to sharpen the mental, as well as the animal appetite, it affords the best facilities for a wholesome digestion of the food demanded by either. Thus labor and study are admirably fitted to be companions and reciprocal aids to each other.

Upon this point I speak from personal experience. The limited knowledge which I possess, has been acquired amid the unremitting labors of a very active mechanical employment, and without the advantages of an ordinary common school education. And in looking abroad among the companions of my boyhood, I find, after the lapse of nearly half a century, that their success and standing in life, has been good or bad, pretty much in the ratio of the culture which they have bestowed on their minds, and their habits of close application to their business. It is not the leisure, nor the opportunity, that is wanting, but the disposition, a resolute determination, to improve our innate faculties, which retards the progress of intellectual culture. We respect and admire in others the talents that are usefully employed. Why not then resolve (for to will is almost to do) to acquire that which we so readily concede to be an excellence in others. Among the thousands of instances which I might quote, of men rising to eminence, and great usefulness, by means of self-instruction, amid the cares and labors of an active business life, I shall detain you by the mention of but one, and leave you to call to mind others, which cannot fail to present themselves within the circle of your acquaintance. I cite this case, because it presented itself first to my notice whilst penning these remarks. The late Rev. Dr. Carey, was the son of a poor man; he entered life with a very defective education, and was brought up to to the humble trade of a shoemaker. These disadvantages were not sufficient to repress his thirst for knowledge. Having resolved to enter the ministry, he set himself to acquire a knowledge of the Greek and Hebrew, the original languages of scripture; and while he was yet laboring for his daily bread with the awl, he sought acquaintance with grammars and dictionaries; and he never left them, says his biographer, till those compiled by him had gained, by universal consent, an honorable place among the monuments of human learning. Mr. Carey became a pioneer missionary to India in 1793. The first six years of his residence in that country were spent in active agricultural pursuits, during which time he acquired so perfect a knowledge of the language of the country, that in 1801, he translated the New Testament into Bengalese and during the seven following years, into all the languages of Northern Hindostan. He in the meantime compiled a volumnious Bengalese dictionary, the first ever published, performed the duties of professor of Sanscrit and Mahratta in the College of Fort William and was withal ever active and efficient in his missionary labors. He subsequently became known as an oriental scholar of the first eminence, was celebrated as a man of science, established at Caluctta an Agricultural society, of which he was an efficient member, and was either a prime mover, or a zealous promoter, in every undertaking for the benefit of his adopted country. This distinguished man died in June last, full of years, and full of honors. Who is there in this assembly that does not, from the narration of this brief biographical sketch, of a self-taught great man, feel his capacity for usefulness enlarged, and mentally resolve, that the influence of so worthy an example shall not be lost upon him. Cherish the sentiment—it is a commendable one.

Which of the two will be able, with the greatest security, to confide in his own powers, in a moment of adversity—he who has indulged his mind and pampered his body, in many luxuries—or he who, contented with a little, and provident for the future, shall, like a wise man, prepare in the time of peace for war?—*Hor.* Every man, in his prosperity, should make provisions to meet adversity.

He who envies the lot of another, must be discontented with his own.—*Hor.*

"Those who are happy at home, should remain there."—*Sat.*

Vices often creep upon us, under the semblance and name of virtues.—*Seneca.*

Sloth, a seductive syren, should be most carefully avoided.—*Horace.* The indolent man can never be useful, either to himself or to promote the well being of others.

THE CULTIVATOR—MAY, 1835.

TO IMPROVE THE SOIL AND THE MIND.

CULTURE OF THE GRAPE.

We have, among our subscribers, many, who delight in the grape, and who are desirous of knowing the best and cheapest methods of producing it in perfection. It is in compliance with the wishes of some of these, that we write the following article, though not exactly coming within the plan of our work.

It is known that the ordinary methods of raising the foreign varieties of the grape, in the open ground, are at least very precarious in this latitude. The fruit is either blighted by mildew, killed by frosts, or does not come to maturity so as to develop all the excellence of its natural flavor. And even our finer native varieties, such as the Isabella, Catawba and Bland's Virginia, frequently do not come to maturity in the neighborhood of Albany in consequence of the early autumnal frosts, and in some of the higher districts, they seldom ripen well, particularly the last named, which many think the superior variety. We have seen at Utica, the Sweetwater, Chasselas and Munier in a fine state of bearing, literally loaded with beautiful fruit, and yet we have been assured by an amatuer residing there, that the grapes of Utica never attain the high flavor which distinguishes them in warmer and dryer situations.

To insure a certain and good crop of this delicious fruit, grape houses may be constructed, in which the vines are trained under glass without any artificial heat, the roots being planted in a border on the south side, and conducted into the house near the surface of the ground. We have constructed a house of this kind, which is 54 feet long, 12 broad, 4 feet high in front on the south, and 12 feet high in the back wall on the north, with two tiers or rows of sashes, each 6 feet by three feet 4 inches, soloing from front to rear, in an angle of about 33 degrees. The ends and back of the building are covered with plank groved together, and the inside is plastered. The total expense was from 120 to $125. We have in it at present, fourteen vines, foreign and native, the number to be reduced as may be found necessary. Small iron dogs are driven into the under side of the rafters which support the glass, at parallel distances, the lower ends having holes through them for the admission of wire. Tinned wire, of a size we believe denominated 12, is run through these holes longitudinally, the whole length of the house, and at the distance of ten inches below the glass, to which the vines are tied. In the rear, on the inside of the wall, we have the peach, apricot, nectarine and fig, trained as wall fruit. Inside of the building we raise early salladings, which are generally consumed before the vines come into foliage. The principal labor necessary, beyond the ordinary pruning and care of the vines, is to drop the upper sashes, when the temperature will permit, and the sun shines bright, about two feet, at eight or nine o'clock in the morning, and to close them again at three or four in the afternoon. This permits the vitiated air to escape, while the pure air from without, being specifically heavier, presses in and induces a healthy circulation. By closing the house in the afternoon, the temperature is in a good measure preserved till the next day. The covering of the building tends greatly to repel the severity of the cold. During the severe weather of January, the mercury in the house, as indicated by a self-registering thermometer, was at no time lower than five degrees above zero; while outside it was as low as 27 below, showing the difference made by the protection to be 32 degrees. About the 8th of March, the frost being out of the soil, we sowed cress and lettuce in the house; both were up in from eight to twelve days; the subsequent snows and frosts, the thermometer sinking twice to fifteen degrees in the open air, did not affect them, and the cress was fit for the table on the first of April. No artificial heat was applied. The produce of such a house may be estimated by those acquainted with the productiveness of the grape, when they consider that the vines in such a house as this, cover a superficial space of 650 square feet.

There is another method of recent introduction, which it requires some professional knowledge to conduct, and the application of some artificial heat; but which accelerates very much the bearing of the vines, the maturing of the fruit, and probably improves its quality. The vines are cultivated in pots. Pieces of the vine, of

two or more feet in length, are coiled in a flower pot, having been first divested of all their buds but one or two at their upper extremity, which are elevated somewhat above the edge of the pot, and the pot filled with fine rich earth. Or, a single eye may be taken, with two or three inches of the adjoining stem. The pots are plunged into a hot-bed, and subseqently transferred to the grape-house. Vines thus treated, sometimes have made fifteen or twenty feet of wood the first year, and produced twenty or thirty bunches of fine grapes the second. These methods have been successfully practised about Boston. The following *particulars of cultivation*, which we copy from the *American Gardeners' Magazine*, a horticultural monthly, published at Boston, by Messrs. Hovey, are the memoranda made by the editors of that work during the process of culture.

"*March 9th*, 1833.—Shoots of the Black Hamburgh and White Chasselas grapes were selected, and formed into cuttings of single eyes or buds; this operation was performed by cutting off the wood in a sloping direction, one inch above the eye or bud, and two inches below. By this method of raising vines from single eyes, they produce a greater number of fibrous roots, which enables them to absorb an abundant supply of nourishment from the soil, and their growth becomes proportionably vigorous and strong. It is of importance, in selecting shoots for the purpose of farming the cuttings, to make choice of wood that is well ripened, short-jointed, sound, and with very little pith; such wood is more likely to be obtained from the middle or lower parts of branches of healthy vines, than near the extremities.

After the cuttings were prepared, pots of three or four inches diameter were filled with a mixture of 1-3d light sandy loam, and 2-3ds leaf soil, in which the cuttings were inserted in a slanting position, and each eye covered about half an inch in depth, finishing off with a gentle watering, and the pots plunged to their rims in a moderate hot-bed.

At the commencement, strict attention was paid to the heat of the bed, as it frequently happens, if the heat is too powerful, the eyes will shoot up before any roots have protruded, and are very liable to be destroyed, either by a powerful sunshine or from too damp an atmosphere.

The cuttings were watered very sparingly until the buds appeared above the surface of the soil; air was freely admitted during the day, and the bed covered at night, in order to preserve an equal temperature as possible.

March 24—being fifteen days from the time the cuttings were put in the pots, they made their appearance above the surface, were shaded from the sun during the middle of the day, until they were well furnished with roots and the leaves began to expand; water was then regularly supplied, and plenty of air allowed, to prevent them from being drawn up weak.

By the ninth of May, the vines had grown to the height of from eight to twelve inches, and were shifted into pots of six inches in diameter, making use of the same kind of soil as the cuttings were put in, at the commencement. In repotting such young vines, they should be handled with great care, as the points of the roots, or spongioles, are exceeding tender, and susceptible of injury; the leading shoots should also be carefully protected, and all laterals removed as soon as they appear The success depends much upon keeping up the temperature of the bed, which should rather increase than decrease as the vines acquire strength; and, as the least check is very injurious in this early stage of their growth, should the heat begin to decline, it must be renewed by linings; for it is an essential point, that they be continually kept in a vigorous and rapidly growing state, the object in view being to produce one strong shoot for bearing fruit the following year.

June 25th,—the vines were from two to three feet in height, and were again repotted into pots fourteen inches in diameter, and fifteen inches in depth; the soil used, was composed of equal parts of light loam and leaf soil, with the addition of about an eighth part of the whole of very rotten manure. After potting, they were removed into the green-house, and placed over the front flue; the shoots were trained upward in a direction corresponding with the slope of the roof, and ten inches from the glass; water was supplied frequently, and occasionally liquid manure, till the wood began to ripen; all lateral shoots were stopped just above the first bud, which bud was retained to prevent the main eyes from starting prematurely.

July 27th,—the vines had attained the length of six feet; and, as a sufficient length of wood was now obtained, each shoot was stopped, by pinching off the point; this caused one or two of the uppermost eyes to start, and these were also stopped when they had grown two or three joints. By thus continually stopping the upper laterals, as often as they were produced, the rapid flow of sap upward was checked, and the shoots acquired greater strength and size. When the wood had become prefectly ripened, each vine was cut to the length of five feet, and all the laterals, which had been suffered to grow during summer in order to preserve the main eyes, were cut in close, leaving a straight clean shoot.

In *November*, the vines were placed under the stage of the green-house, where they remained till the first week in March following, and were then placed in their former situation.

March 15, 1834,—the buds began to open, and by the 30th, the fruit buds were distinctly visible; two to four bunches appearing from every eye, with the exception of two or three of the lowest. When the fruit was fairly developed, the shoots were stopped at the second bud above the upper bunch; and *one* bunch only was retained on each shoot, with the exception of two vines; on these, *two* bunches to each shoot were allowed to remain, for the purpose of ascertaining more fully, to what extent vines in pots could support and ripen a crop of fruit. The two last mentioned vines were Black Hamburghs. One of them produced twenty eight, and the other thirty bunches; but it ultimately proved to be too large a number for them to ripen perfectly. Water was plentifully supplied, as often as the surface of the soil in the pots became dry, and the foliage was syringed frequently. No other care was necessary throughout the season, than occasionally to tie up the bearing shoots, to prevent them from being broken by the weight of the fruit.

Five of the vines, viz: three White Chasselas and two Hamburgh, produced from eighteen to twenty-five bunches each, or one hundred and six collectively; and on the 30th of July, the Chasselas grapes were perfectly ripe, the Hamburghs had changed color, but did not arrive at maturity till about the 25th of August. Although from fourteen to tweny bunches are considered by the English cultivators as a good crop for one vine, yet, from the experience which we have had, thus far, in the culture of vines in pots, we have no doubt but that thirty bunches and upwards, of the small growing kinds, as the Sweetwater, Muscadines, &c. may be obtained from each vine, equal in excellence to those grown by any other method. Mr. Stafford, one of the most successful cultivators, says, that all the most delicate sorts are superior, when grown in pots, to any he ever saw grown on the rafters; and he further states, that he has often proved, that a pot placed in the house on the 1st of January, and the same species trained up the rafter, and subjected to the same heat—the former will ripen its fruit at least a month earlier than the latter.

The annexed plan is one we would suggest to those who wish to erect a small house, which would answer the purpose of growing grapes in pots without great expense.

Fig. 1, is a section of the house, which is ten feet in diameter, eight feet high at the back, and four feet in front; it is sunk two feet under the surface of the ground, as at (*a a*), if the situation is dry—otherwise it should be on a level; (*b*) is a flue which may commence at either end of the house, as convenient, and should be carried across the end, along the front, and out at the back; (*c*) is a pit in the centre, which may be used for many purposes; such as raising lettuces, radishes, &c. or for starting annual flowers, early cabbages, culiflowers, &c. to be transplanted out in the garden; as it will not be shaded till the vines have made considerable growth; or vines on the coiling system, which will require bottom heat to grow them, might be plunged. The pit is intended to be filled with leaves mixed with manure, or with leaves alo e, as at (*d*). The back and ends may be made of common boards, placed eight inches apart, filled in between the two, with leaves, hay, sea-weed or dry tan (*e e*); the front may be of thick four inch plank. (*f*) is a shelf on the back, four feet from the bottom; it should be about fourteen inches wide, and made very strong; on this and the flue, all round, should be placed the pots of vines; those on the flue to be trained up half way the roof of the house, and those on the back shelf to be trained down to meet them at the same slope of the glass, at the distance of ten inches. The trellis may be made of wire or of wood.

1

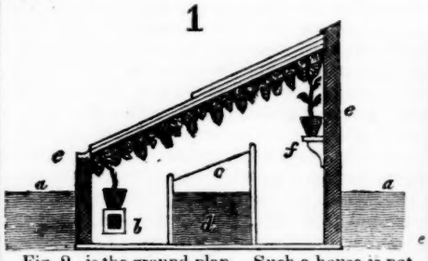


Fig. 2.

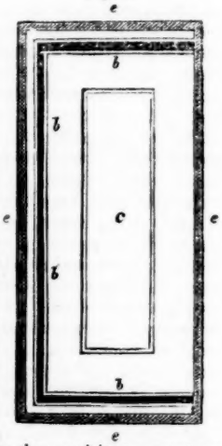


Fig. 2. is the ground plan. Such a house is not intended for forcing in January or February; as it would require more length of flue, and fires to be kept continually burning, which would be attended with considerable expense and attention. One could, however, easily be made for the purpose. In this house it is supposed that, if the vines commenced growing about the 1st of March, ripe fruit would be obtained from the 1st of August to the middle of September, according to the earliness or lateness of the variety. If lower sashes are covered during night with mats or hay, in March, very little fire would be required to keep up the requisite temperature, which should not be on an average, more than fifty-five degrees the first fifteen or twenty days. The expense of erecting such a house would not be great, and it would contain about fifty pots of vines, which would ripen at least three hundred pounds of grapes."

BEES AND BEE-HOUSES.

The use of *houses* for bees, we believe, is of modern date. Some three or four winters ago, in travelling in Otsego county, we were shown the first bee-houses we ever saw or heard of. One was four and another six feet square, and six or seven feet high, made perfectly tight, with a good floor, and with a door for occasional entrance. One had been tenanted two summers, and contained probably about 200 lbs. honey. The other had been occupied but a season, and contained less honey. Neither had sent out a new swarm. We were so pleased with this management, that immediately on reaching home we had a *bee-house* built, and in June following introduced into it a swarm of bees the day they left the parent hive. They filled the hive in which they were introduced, but no more, and the next year sent out two swarms. In the mean time we made a bee-house, or bee room, in our garret, adjoining

the eastern brick gable end, fitted the interior for the reception of a hive, and opened an aperture through the wall at the point parallel with that where the bottom of the hive would stand. The first swarm that came forth were placed in it. They not only filled the hive, but nearly covered it with comb and honey the first season. We have taken from their stores a considerable quantity of honey for our table, always delicately white and fine, which has been more than made good the following summer. The quantity of honey in the room must now amount to nearly 200 lbs. No interruption to their labors has been apparent, nor have they sent out in the three summers any new swarm. We built another bee-room in the garret last summer, and put therein a fine swarm of bees. They promise to do equally well with the first. A bee moth has been occasionally seen in the garret, and one in the bee-house, but not the least indication of their web or larvæ about the hive or honey.

It has been said, that where there are a number of hives, the bee-moth concentrate in one hive, and leave the others undisturbed. This has been in a manner verified by our observation during the two last years: for we have, in both years found one hive almost literally filled with the worm, butterfly and web, which we immediately consigned, hive, honey and all, to the flames; but have not found a moth, or the signs of one, in other hives from which we have taken honey. Though it is well to remark, that the honey has been uniformly taken from the uppermost of a double hive, without destroying the bees, which were driven into the lower apartment. The two boxes are of equal dimensions. A hole is made in the top of the lower one, for the bees to pass up, and the upper box set on, and fastened to the lower one by hooks and buttons. The upper box is always filled first, and when the under one is filled, and this is considered sufficient to subsist the bees during the winter, the upper box may be taken off, the honey, which is found to be pure, and free from young and bee bread, taken out, and the box returned. The bees are driven into the lower apartment by blowing tobacco smoke into the upper one.

In November last, we took two late swarms, which appeared to have scanty supplies for the winter, and placed them on a shelf in a dark cellar. About the 20th March they were examined. The bees in one hive were dead; they had been apparently smothered for want of air or by bad air. Water had got under a corner of the hive and produced mouldiness. The honey had apparently suffered no diminution during the winter. The bees in the other hive were in good condition; not a dead one was seen; and on being removed to the stand, the day being warm, soon became lively. From this experiment, we think weak swarms may in this way be preserved during the winter in a dormant state.

In preparing a bee-house, we recommend, that the hive which is to be put into it with the young swarm, for such we should prefer, be placed above the centre on the east wall, that the aperture through the wall, for the egress and ingress of the bees, be parallel with the bottom of the hive, and that the staging on that side, to sustain the comb, be fifteen or eighteen inches broad. The comb, when extended on the outside of the hive, assumes the form of a cone, the top of the hive constituting the apex, spreading below equally on the front and sides, and extending considerably below the hive. Without a broad staging, therefore, the comb in front, having nothing to sustain it, breaks off from its own weight, and falls to the floor.

NORMAL SCHOOLS.

We gave, in our last, a brief account of the primary schools in Prussia, abstracted from M. Cousin's report; and we proceed now to speak of the Normal Schools, that is, schools for training teachers for the primary schools. The Prussian law declares, that:

"A schoolmaster, to be worthy of his vocation, should be pious, discreet, and deeply impressed with the dignity and sacredness of his calling. He should be thoroughly acquainted with the duties peculiar to the grade of primary instruction in which he desires to be employed; he should possess the art of communicating knowledge, with that of moulding the minds of his children; he should be unshaken in his loyalty to the state, conscientious in the duties of his office, friendly and judicious in his intercourse with the parents of his pupils, and with his fellow citizens in general; finally, he should strive to inspire them with a lively interest in the school, and secure to it their favor and support."

As none can teach to others what they do not themselves know, —and as the example of the master has great influence in forming the habits of the pupils—it is very justly considered indispensable in the qualifications of teachers, that they shall be competent, and of good character, habits and disposition. These qualifications, we cannot but think, are too little regarded in selecting teachers for our common schools.

A normal school, for training teachers for primary schools, is required to be established in each department. No school can receive more than 60 or 70 pupils. The expense of these schools is defrayed in part by the government and part by the department. The pupils before admittance, must have passed a good examination in the primary schools. The age of admission is from 16 to 18, and the course of studies three years. The first year is devoted to supplementary primary instruction, the second to specific and more elevated studies, and the third to practice and occasional experiments in the primary schools, one of which is attached to each normal school, and other schools in the place. Provision is made for the education, in these schools, of poor youth of good promise; and the pupils thus assisted, are obliged to accept, at the expiration of their course, the masterships of such schools as may be assigned them, with the chance of promotion according to merit. It is declared, that

"With respect to teaching, the endeavor shall be, not so much to inculcate theories on the pupils, as to lead them by enlightened observation, and their own experience, to simple and lucid principles; and with this view, to the normal schools shall be attached others, in which the pupils may exercise themselves by practice."

All the studies and exercises required in the primary schools are introduced here, but prosecuted to a greater extent. On completing the course, the pupils are submitted to a rigid examination, and receive certificates of capacity, bearing the distinctive appellations of "excellent," "good or sufficient," or "passable." Such as prove incompetent are rejected, or sent back to pursue their studies. Those who pass examination, have their names inscribed, with the index of the degree of their certificate, upon the departmental list of candidates, which list is published every six months in the official gazette of the department. The teacher receives a brevet of his appointment, in which his duties and salary are specifically stated. He is required to take an oath on entering on his duties, and is publicly installed in the church, in presence of the scholars and public authorities, to all of whom he is to be formally presented.

A process verbal of the installation is drawn up and deposited among the archives of the school. His conduct as a teacher is closely scrutinized. For indolence, carelessness, bad disposition, or neglect, he is first admonished, and may subsequently be fined, and deprived of his employment. Gross violations of modesty, temperance, moderation, or any open abuse of his authority as father, husband, or head of a family, is also punished with the loss of place. Such are the prominent regulations in regard to the normal schools of Prussia; and they are highly calculated, we conceive, to have a benign influence upon the character and happiness of the nation.

As we have before observed, the Prussian system of primary instruction was not matured till 1819. Its happy influence has been manifested in the increase and improvement of the schools. From the returns made in 1831, it seems that the number of children sent to the primary schools exceeded the estimated number of all the children in the kingdom between the ages of 7 and 14; that there were then 21,879 primary, and 823 middle or burgher schools, which employed 23,920 head masters, 983 head mistresses, and 2,811 assistants, and that the pupils averaged about 75 to each teacher and assistant;—that there are 28 normal schools, in which there are fifteen hundred pupils, and that these schools furnish 700 candidates annually for mastership. The expense of a pupil in the normal schools averages about $44 per annum; and the expense of the 28 schools is stated at about $66,000.

School Libraries.—This is a prominent feature in the Prussain system of instruction which we may adopt with unquestionable advantage. However accessible books may be in the cities and villages,—and however multiplied the productions of the press at the present day, it is a fact that will not be questioned, that in a considerable portion of our country the means of acquiring useful knowledge, from books, are very limited; and perhaps we may add, that the desire for obtaining this knowledge is no where sufficiently manifest. There are few public libraries in the country; and if

there were many, the opportunity of being benefitted by them could not be general. Besides the generality of the books which they contain are not well adapted to the capacities of juvenile readers, nor to the business which they are destined to follow. The outlay in a school district, of ten or twenty dollars a year, in establishing and replenishing a school library, would be but a small tax in comparison with the benefits which might be expected to flow from it. It would be sowing useful seed, and the community would not fail to reap the harvest. It would serve to diversify the studies, to beget a taste for substantial acquirements, avert bad habits, and lay the foundation of respectability and usefulness. The mental soil is good, but, like the natural soil, it needs culture to render it productive. We vaunt of our knowledge, and affect to believe that we are the most enlightened people on earth. And yet I fear we should suffer, greatly suffer, on the score of education and good habits, the things which eminently contribute to happiness, by a comparison with the *subjects* of the King of Prussia! The truth is, we are deceiving ourselves—we are not so enlightened as we would be thought to be—or as we might be, and ought to be. It is time to get rid of this delusion—to acknowledge and repair our faults—by more liberal and enlightened provisions to fit THE CHILDREN OF THE NATION for the high privileges they enjoy, and the high responsibilities they are to assume.

P. S. A bill has passed the Legislature authorizing the establishing district school libraries.

WORN OUT LANDS.

A friend in Virginia writes us as follows:—"Enclosed I send to you thirty dollars for the 2d Vol. of the Cultivator. You will judge by this our opinion of the work. Our people have been deeply engaged in the production of tobacco, and our lands have been neglected, injured, and I might almost say destroyed. Give us some instruction, if you please, as to the best plan of stopping the gullies, and healing the galls with which our fields so much abound; and also directions for a farm yard, and for a barn on a pretty large scale."

A substantial compliment like this lays us under an obligation which we are afraid it is out of our power handsomely to requite. We confess we have no practical knowledge as to the best method of stopping gullies and healing galls, for it has been our aim to prevent both on the limited grounds we cultivate; but we have seen much of these evil effects of bad husbandry, and will venture to prescribe for their cure.

Virginia farmers, as well as many further north, have, it would seem, resembled too much in their practice the prodigal son, who, not content to spend the *income* of the patrimonial estate, encroaches annually on the principal, until *that* is exhausted, and he is reduced to want. The soil, or rather the animal and vegetable matter which is blended with the earth, is the farmer's capital. The more this becomes exhausted or wasted, by injudicious cropping, the more this capital is reduced; and consequently, the interest, or product, upon which he depends for a maintenance, undergoes a corresponding diminution,—until, at last, both principal and interest,—capital and soil,—are wholly exhausted. But there is a common remedy for both these evils, which, though slow, is nevertheless sure;—it is persevering industry, guided by prudence, and animated by hope. And it is here that the maxim of Poor Richard, that

> "He that by the plough would thrive,
> "Himself must either hold or drive,"

emphatically applies. We are fearful that too many of the Virginia farmers have trusted too much to overseers and stewards, instead of studying their business, and qualifying themselves personally to direct the operations of the farm. If they will devote their leisure to learn more of the principles of their business, and to directing and superintending the operations of the farm personally, they will soon discover the defects in their practice, and be able to apply suitable remedies: and we can venture to assure them, that they will find this study and this practice among the most pleasant and ennobling that engage the attention of man. The Old Dominion *can* become as distinguished in her agriculture, as she has long been for her hospitality and patriotism. But to do this, the mind must be brought to the aid of labor.

Gullies and galls are occasioned, we presume, by the exhaustion of the vegetable matter of the soil, by severe cropping,—the omission to alternate grass seeds while the soil is capable of sustaining a healthy firm sod,—and the want of artificial drains to conduct the water into natural channels, or to prevent it accumulating in accidental ones. A system of management the reverse of the bad one which has caused these evils, is the best calculated to cure them. That is—less must be taken off or more carried on;—grass seeds must be sown with small grain;—grass must intervene more frequently in the alternation;—all the means of fertility which the farm affords, must be well husbanded and judiciously applied, and extraneous manures brought on;—and the water conducted off the fields in gently inclined artificial drains.

Plants are as much dependant on food for nourishment and growth, as animals are; and there is as much propriety in expecting a horse to thrive at a stall which is never replenished with forage or provender, as there is in expecting a continuation of good crops from a field which is never replenished with manure. Philosophers may *speculate* upon what constitutes the food of plants, but the practical farmer *knows* that a crop is luxuriant and abundant, pretty much in the ratio of the manure which is applied to the soil. The inference is irresistible, that vegetable and animal matters constitute the basis of the food of vegetables. The elements of the dead and the living plant are the same, and they are transmuted, by a natural process, from the former into the latter. Tobacco is among the most exhausting crops, as it takes much from the soil, and gives little or nothing to it in return. We are told that it is a rule in Holland and Flanders, not to sow flax on the same field oftener than once in eight or ten years, on account of the exhausting quality of the crop, which, like tobacco, returns nothing to the soil.

The means of fertility on a farm are seldom either well husbanded, or well applied. Every vegetable and animal matter may be converted into the food of plants; and the urine of the stock, when yarded, and which in Flanders constitutes almost a moiety of the manure, might be mostly saved, by keeping the yard well littered, or bedded with swamp earth, to absorb it. Gypsum is a powerful auxiliary on light soils, where clover forms the basis of improvement; lime benefits stiff soils, and marl, where it is found convenient, is employed as a means of inducing fertility with manifest advantage.

We have seen the following method practised, with success, to render gullies productive, and to cover with a healthy sod, the galls, which are generally on the declivities of gullies. The first object was to prevent an accumulation of surface waters passing down, by drains constructed to carry it off where it would do less injury. The next step was to fill the water course with brush and earth, smooth the declivities, so as to give to the earth a comely appearance, and then to carry on and spread a layer of coarse manure from the cattle yards, abounding in straw, hay and seeds. When necessary, enough earth was spread over this to prevent the litter being blown away. In the course of the season, the grass seeds sprung up, the manure afforded sustenance to the plants; and cattle being kept from the place, a substantial sod was soon formed, which is yet suffered to remain undisturbed by the plough.

Upon the subject of cattle yards, we beg leave to refer to our directions for their construction, published in the first volume of the Cultivator, page 62.

We confess ourselves not sufficiently acquainted with the husbandry of Virginia, to venture an opinion as to the model of a barn best suited to one of its lage farms; but we would respectively solicit an answer to this part of our correspondent's request from a more competent pen.

Seed Corn, should be first soaked, say 12 hours, in water heated to near the boiling point, to saturate the grain, and induce early germination; then having put half a pint or more of tar in an iron dish, with a quart or two of water, heat it till the tar is dissolved or incorporated with the water, when the whole may be turned on to the already soaked seed, which is then to be well stirred. The flavor of the tar thereby strongly impregnates the seed, and prevents the birds or squirrels taking it. Then take the corn from the water, and mix with it as much gypsum as will adhere to the grain; and put six or eight kernels into a hill, reducing the number of plants at the first hoeing to three or four, and them the most thrifty and promising. This will require six extra quarts of seed to the acre, and the consequent increase of product, in conse-

quence of each hill having its complement of stalks, will not be less than six bushels. So effectual is this method of preparing seed in saving the crop from the depredations of birds, that we have dispensed altogether with the use of scarecrows. Last year, one row in a corn-field was accidentally left unplanted. It was afterwards planted with unprepared seed. The crows took up the most of it, while we could not discover that they had taken a hill planted with the tarred seed.

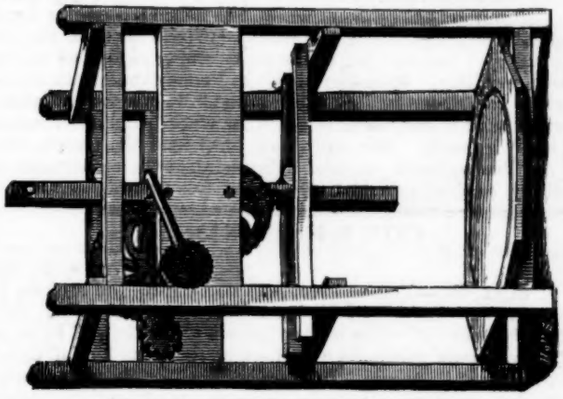
A correspondent inquires at what distance the plants should remain in the drill system of culture, where there are two or three rows in a drill. We cannot prescribe, but recommend from six to twelve inches, according to the richness of the soil, and the variety of the corn cultivated—the richer the soil, and the more dwarfish the growth of the stalk, the nearer the plants may be left. The more rich the pasture, and the smaller the animals which are put upon it, the greater number will it support.

Lucern may be sown till the 15 of this month, at the rate of sixteen pounds to the acre. The soil should be dry and loose, rich and clean, and the subsoil pervious, so that the tap roots may extend down four or five feet, without encountering clay, hard-pan or water. Potatoes are a good preparation for lucern; but they ought to be well dunged, and kept clean of weeds. The seed of lucern may be sown in drills, with a drill barrow, the drills eighteen inches apart, when nothing is sown with it; or it may be sown broadcast with small grains, and the ground should be well harrowed and rolled. Our practice has been to sown half a bushel of winter rye with the seed to the acre. When it has taken root it withstands the drought better than any other grass, on account of its long tap-roots. It may, and if there are many weeds, it ought to be mown the last of August, after sowing. In subsequent years it may be cut as soon as it shows blossom, and, if the soil is good, it will bear cutting three, and often four times in a season. The great economy of this grass is to cut and feed it green. All farm stock, including hogs, are fond of it. An acre of good lucern will keep five or six cows from the 20th May to October. If made into hay, it should be cured in cock, to prevent the waste of the leaves. Partially cured, and mixed in the barn with barley straw, in alternate layers, it saves well, and very much improves the straw. The seed may be had at the seed shops, at twenty-five and thirty cents per pound. It is mostly imported from France.

The Osier Willow is worthy a place on every farm, because it takes up very little ground, requires very little care, and furnishes the best materials for baskets, which are indispensable to the farmer. This, like all the willows, is readily propagated by cuttings. Where it has taken good root, its shoots, in good ground, grow from four to eight feet in a season. These shoots should all be taken off every winter, unless very large willows are wanted, and the number is thereby annually increased. The art of fabricating baskets from them is easily acquired, and may be practised in evenings and stormy days in the winter without cost. For ordinary baskets, the osier is used with the bark on; but for neat house baskets they are peeled. The best way to divest them of the bark, is to cut, sort and tie the osiers in small bundles, say early in March, and place the bundles in a pool of stagnant water; and at the season the leaf buds are bursting, the bark will readily strip off. The osiers may then be laid up to be used when leisure will permit. A well made osier basket is worth three or four made of splits. We have them which have been in wear years, and are yet good. To give them firmness and durability, a good rim and ribs, of oak, hickory or other substantial wood are necessary.

Transplanting Evergreens.—In reply to the inquiry, "What is the best season for transplating evergreens?" we state the last of May, in this latitude, or when, in any place, the new spring's growth begins to shoot. If they can be taken up and removed with a ball of earth about their roots, they may be transplanted at almost any season. But this can seldom be done, unless the plants are grown in a nursery; for here they are generally furnished with a large number of fibrous roots, to which the earth adheres, which forest trees seldom possess. Evergreens require a constant supply of food to sustain their foliage. If they are removed when in a quiescent state of growth, the mouths or roots are necessarily diminished, and the plant is apt to die before the requisite supply is obtained. But if removed after the sap is in circulation, fewer roots will furnish a supply, and new roots become sooner formed. To prevent evaporation, from which the greatest danger arises, the ground about newly transplanted evergreens should be well mulched with a coarse wet litter from the barn-yard, and a pail of water may be occasionally thrown upon it, when the weather is dry.

KIBBE'S PATENT CHEESE PRESS, a cut of which is given below, is an improvement deserving the attention of dairymen and others, who have occasion for its use. It occupies but little room, being three feet long, sixteen inches broad, and five feet high. It may be managed, by a child, and the pressure graduated at pleasure The patentee, S. Kibbe, resides at Esperance, Schoharie. The price of a Press, of the dimensions given above, is $15.



Winter Butter, it is known, is generally deficient both in color and flavor. This arises partly from the cows being kept at this season exclusively upon dry food, and partly from not managing the churning process under the right temperature. A writer in the New-England Farmer says he finds in the carrot a corrective for both these evils. To adopt his words, his method is, to "take four carrots of the Altringham kind [and other kinds will serve as well] of about one and a half inches in diameter, to cream enough to make ten pounds of butter, and after washing them, to grate and cover them with new milk, and after they have stood ten minutes to squeeze them through a cloth into the cream, and the effect has been to make the butter come quicker, and give it the color and *sweetness* of May butter." We can readily believe that carrots will impart a fine color to butter, and even a rich flavor,—*if given to the cows in sufficient qnantity*—the substance, and not the coloring matter, must be required to give much flavor. Cows fed with ruta baga, or mangel worzel, or carrots, will produce butter, at all seasons, defective neither in color or flavor.

Morus Multicaulis.—We have been censured for expressing our doubts whether the Chinese mulberry would withstand our winters. Judge Bradley, of Onondaga, a highly worthy and ardent promoter of the silk business, has expressed to us similar doubts. His Chinese mulberries, he says, are frozen down every winter. This, we are aware, is not the case in some soils and situations; but in this case it is best to err on the side of caution. The peach and cherry, as well as the mulberry, stand the winter better in a clay or stiff soil, than in one which is loose or sandy.

The Silk Culturist, is the title of a monthly paper of eight quarto pages, published by the Executive Committee of the Hartford County Silk Society, at fifty cents per annum, the first number of which has just come to hand. It is particularly devoted to the culture of the mulberry, the rearing of silk worms, and the processes of preparing silk. This work was much wanted; and we commend it to the patronage of every family who are employed, or design to be employed, in the silk business.

Southern Clover.—A farmer remarked to us the other day, that he preferred the seed of northern, or large clover, for the reason, that the winter was less severe upon it than upon the small or

southern. It then, for the first time, occurred to us, that since we had used the southern seed, which we have done for the last three years, our clover had been much more winter killed than formerly, when we raised the large kind. We should be glad to learn the experience of others in this matter.

SPELTA—OR SPELT WHEAT.

B. F. Hutchinson Esq., of Middle Island, Suffolk, has asked us to make known, through the Cultivator, the mode of culture, product, &c., of this species of grain. As we have no practical knowledge in its culture, our answer can only apply to a part of his inquires.

Spelt wheat is distinguished by its stout straw, which is almost solid, and by its strong spikes, with the chaff partially awned. The chaff adheres close to the grain, and is not easily separated. The grain is light and yields but little flour, but yields a greater portion of gluten than common wheat, and hence is superior, in pastry and confectionary. It is the principal wheat raised in Suabia and the north of Switzerland, and is considerably cultivated in France, Spain and Italy. It is also grown in Pennsylvania. It is sown in spring, and ripens in July and August. It is sown on lands, generally, which are too poor for other wheat, and on mountainous or stony grounds. We will thank our friend Mr. Grove, or some of our Pennsylvania patrons, to furnish us with a statement of the ordinary product and relative value of this grain.

CORRESPONDENCE.

Buffalo, March 10th, 1835.

J. Buel, Sir—You will recollect that during the evening I lately spent at your hospitable mansion, while discussing the new English theory of "the matter thrown off in the soil by a species of plant, being poisonous to others of the same kind if cultivated in succession," by which rotation becomes absolutely necessary, I dissented, with you, from the doctrine, as altogether inapplicable to many American soils, particularly those of the western country. And I will here remark, in confirmation of an opinion which I have long entertained, that much of the current English experience as well as theory in agriculture, is altogether inapplicable and useless in our own country, and to succeed thoroughly, the American farmer should, excepting what relates to broadly established and universal principles, depend on American experience alone.

Although rotation of crops, as a system, has been adopted by the best agriculturists in the older settled parts of the U. States, and is no doubt the best which can be pursued in the primitive soils, yet large portions of our country would actually suffer by such a process. I incline to think that it has yet to be settled, what is the most profitable system of agriculture applicable to a large portion of our new states and soils, for they have as yet been so imperfectly cultivated, and with so little regular system, that the full nature and capacity of those soils are little understood. Yielding, as they usually do, abundant crops with slight culture, their occupants have so far been content with their present productions, without examining by thorough experiments what more may be done.

The soils I now speak of, are the great secondary regions of western New-York, and which extend most around the great lakes, and down the Mississippi valley. These are the most productive of our northern soils, and to the present time are mostly cultivated without manure, or the aid of artificial stimulants, by which process the primitive soils would be altogether unproductive. But to the question of succession of crops, in opposition to the above quoted theory.

Throughout a large district of western New-York, wheat is the staple article of cultivation. The lands which produce it, although good for other grains, roots, pulse, and grasses, yield wheat in abundance, and therefore they are for that purpose the most profitable. With many farmers, for forty years past and more, it has been for several consecutive years the only crop of their fields. Again, they have let their fields rest every other crop, and fallowing for seed the season succeeding the harvest, without laying the lands into grass. Others again have laid their lands into clover, sowing the seed in the spring following the sowing of the wheat; pastured the fields after harvest, and the following year fallowed as usual. All these different modes have succeeded well, and many instances may be cited where wheat has followed for many years in continued succession with equal success, and abundant crops. Many wheat soils too, the most unpromising at first, continue to yield without manure or stimulant of any kind, and have constantly improved from their first cultivation. A portion of the best wheat lands in our state, lying in Livingston, Genesee, Monroe and Erie counties, were for years unsettled and neglected; and long after the softer and better timbered lands were subdued, were these stony lime lands cleared up and put into cultivation. They are now the *surest* lands for a crop of *good* wheat. Here the quality may be depended on, when the blast, or rust, or a shrinking of the berry prevails with the wheat of the softer soils. This is also the case with large tracts of land near lake Erie, in Ohio, also in Michigan, and further west. Here indeed the question might be opened to the inquiry, as to how far lime may be the native soil for wheat; and why it is that the continual ploughing of limestone lands, and their exposure to the atmosphere, promotes fertility, which is indeed the fact. But as my present object is to state facts for the purpose of disapproving an unsound but plausible theory, I must omit the subject for perhaps some future communication.

These different varieties of soils, appear each in degrees more than another, peculiarly friendly to the production of certain crops. The alluvial bottoms of many of the streams in this and the western states, are remarkable for the production of Indian corn. I know of large tracts on the Genesee river, the Tonewanda and Buffalo creeks, which for thirty or forty years have been settled by the whites, who have made corn their standing crop, and were the Indian cornfields for all past time so far as the Indians themselves know. Many of these lands scarce ever overflow, are ploughed only to an ordinary depth, yet yield oftentimes eighty bushels to the acre with only common culture. I have seen on the Muskingum, the Sciota and Sandusky bottoms in Ohio, fields of more than a hundred acres each, which would harvest an average of seventy-five bushels to the acre, where corn had been the annual crop time out of mind. The depth of these soils is prodigious, in many instances twenty or thirty feet, apparently of the same quality.

In the fine grazing regions of the south parts of Genesee, Erie, Chautauque, Cattaraugus and Allegany counties, immense tracts of the finest pastures exist, where no grass seed has been sown by the farmers; white clover and blue or spear grass having come in spontaneously on clearing the lands, which remains permanently good. It is now not at all diminished, after thirty years' occupation. While riding through a portion of these counties a few years since, where grazing, dairy, and the raising of cattle and sheep was the principal business of the farmers, I remarked upon the very rough and uneven appearance of the meadows; having never been ploughed, and possessing after many years of cropping, all the inequalities of surface which upturned trees and decayed trunks, although long since removed, had caused. I inquired why these, to appearance, valuable mowing lands, were suffered to remain in so rough a state, when two or three ploughings and a cultivated crop or two would make them smooth? I was answered that ploughing would materially injure their productiveness, being never so good for grass afterwards; that immediately after clearing, the land was either harrowed into wheat or oats with grass seed, and so had since remained in grass after the first crop was harvested; yielding continually without measure, excellent crops, with no deterioration.

In this same region also, oats are raised in great abundance. In the south part of Erie, and I doubt not equally so with the other counties named in this grass district, oats in quantity and quality exceed any that I ever knew. The soils are sometimes slaty gravel, both coarse and fine; gravelly, sandy and vegetable loams, and sometimes clay and clayey marl. But the best oat lands are the slate and loam soils. In these, oats have been raised in some instances, eighteen or twenty years in succession, and I last summer saw many large stubble fields on the hills and table lands, where the oats had lodged, in consequence of their immense growth, which had never been manured, and had yielded frequent and heavy crops. Yet these lands were poor for wheat, and but ordinary for corn. The farmers who cultivate them, seem fully assured that

they will last for a long time with such cultivation; and although when on first learning their process, my preconceived opinions condemed their system, yet further inquiry and reflection, convinced me they were correct. The oat crop, particularly, they held to improve with cultivation.

Now do not all these facts prove, or at least imply, that there is some latent quality of the soil particularly friendly to the production of these different crops? And do they not open a new and most interesting field for observation and experiment? And in the relation of these circumstances, is not much of hitherto sound theory and settled experience put at fault? I confess that it seems so. In my own green experience, I find oftentimes that approved modes must be dispensed with, and others more suitable to the new and different soils that we cultivate, adopted. An analysis of some of our western soils, with the best plans of their cultivation, might be amusing, if not instructive to many of your distant readers; and although not prepared to give the former, yet I may at some future opportunity give you a chapter on the latter, and show you how amply they possess in themselves, inexhaustable elements of fertility; and why, contrary to the opinions of many of our Atlantic neighbors who fully believe that all new lands must be in a few years exhausted, and without stimulant by manure, become as impoverished as their own, they may, by judicious cultivation, remain abundantly productive, and an almost inexhaustible source of wealth to their proprietors.

I am so well convinced of the utility of stocking newly cleared lands into grass for mowing and pasture, with wheat and oats, that I shall this spring put in upwards of 100 acres with oats alone, having already sown about fifty acres with wheat. I last June had about 40 acres laid into grass with oats immediately after cleaning, with a thorough harrowing; and a finer, and more promising piece of grass I have seldom seen. Timothy and red clover, with an occasional sprinkling of red-top, is the principal grass used in this region. These lands are excellent for wheat as well as grass, and will bear ploughing and laying down with evident advantage as occasion may require. The white clover rapidly works in, making a thick bottom, and adding largely to the crop of hay. For a rich supply of after feed, no grass can be more valuable and nutritious. Here I am reminded of another fact, which is, that on some portions of our rich *wheat* lands, unless watered, the red clover, timothy and red-top are in a few years run out by white clover and blue grass, which renders their ploughing up and cropping necessary in order to let them again well into meadows; a fact which fully demonstrates to my mind the above expressed opinions, that particular soils are peculiarly fitted by nature for certain crops, and require a totally different course of cultivation from others.

Very truly and respectfully yours, L. F. ALLEN.

QUERIES AND ANSWERS, IN RELATION TO SHEEP HUSBANDRY.

The five queries which are quoted below, came from an anonymous correspondent. They were forwarded to a gentleman pre-eminently distinguished as one of the best judges of stock, and withal an extensive breeder, who has promptly and very obligingly furnished us with the subjoined answers.

1. "*Of what breed or stock had a beginner better compose his flock, his object being the growing of fine wool?*" Pure Merino, crossed with high bred South Downs.

2. "*What are the prices at which the Saxony, South Down, Cotswold, Leicester, Bakewell, or Merino ewes, can be purchased respectively, after shearing?*" From a *good* flock, you cannot *select ewes*, or it would not long remain a good flock; lambs or yearlings may be selected perhaps—price very various—depending on purity of blood, and individual excellence.

3. "*What breed produces wool of the greatest value?*" Saxony *per pound*—Merino *per fleece*. "*And what breed yields the heaviest fleece?*" The great Lincoln, or Romney Marsh sheep.

4. "*What breed is most hardy and best adapted to our climate?*" South Downs, *certainly*.

5. "*On what lands how many sheep per acre can be profitably kept?*" That depends on the breed of sheep, and quality of land, but much fewer than are generally kept.

The Saxon sheep undoubtedly produce the finest wool; but their fleece is light, seldom exceeding 2½ lb. in weight, and is too open to resist our storms. They are feeble in constitution—require great care, are poor nurses, and their lambs are raised with difficulty. The mutton from such sheep must necessarily be of a miserable description.

I believe that in Connecticut, even the pure Saxony sheep may now be purchased at a comparatively low price, say from six dollars to four dollars a head, and perhaps lower still.

The *old fashioned pure* Merino sheep, which were imported by Col. Humphrey, and those associated with him, (but which are now almost extinct) were a much better constitution sheep, and *more* than made up by quantity for the difference in the quality of their fleece—the close, thick texture of their wool resisted our cold wet storms—their lambs were much easier raised, the ewes were better nurses, and on the whole, I am convinced they are a much more profitable sheep than the Saxony. I must, however, remark, there are several varieties of the Spanish sheep; and I would carefully avoid the "gummy"* family fleece, which however, must not be confounded with that, which, though of a dark color, contains only the grease neccssary to render it impenetrable to the weather; the former being very objectionable to the manufacturer, while the latter is readily cleansed and worked.

I desire to be understood as speaking of the *pure* breeds, and not of *grade* sheep, which so universally abound in this state, for *they* have no distinctive or fixed character, but vary with their degree of consanguinity to the pure imported blood. Indeed I feel well assured that there are very few individuals of the pure unmixed blood to be found.

The earlier merino flocks of this state, were obtained from the introduction of imported bucks, and those were purchased at great prices, which, with the native ewe, formed the ancestry of our fine wooled flocks: these had not attained nearly to the excellence of the pure merino, in the staple of its wool—its compactness—its uniformity, or softness, when the Saxony cross was introduced, and became almost universal in a surprisingly short time—and this is the true history of almost all our fine grade sheep in this state. It is not, therefore, to these flocks that I allude, when I speak of *pure* merino, or Saxony sheep.

As to price, I presume such merino sheep are more costly now than the Saxony! from the fact that farmers are now aware of their error in using the Saxon cross, which has ruined the constitution of their flocks, decreased their clip of wool nearly one-half, and reduced their produce, until, with ordinary management, more than twenty-five lambs to an hundred ewes, are seldom raised. A merino buck, of *unquestionable* purity, whose ancestry were both imported, will now sell for twenty-five and thirty dollars; the same animal, eighteen months since, might have been picked up at $8 and $10.

The Leicestershire, Bakewell, and Cotswold sheep, are so crossed and mingled in this country, that the distinction is lost, excepting to the practised eye, who can find individuals in the various flocks which partake, as it may happen, more of the characteristics of the one parent or the other. These are a long, coarse wooled sheep, possessing much beauty of form, early maturity, and are quick feeders; but they require rich lands for their pasture, and though their constitutions are good, yet their fleece is sufficiently open to admit the penetrating rains of our severe storms, and then it is, that their heavy fleeces are seen separated along the ridge of the back, thus admitting the wet directly to the skin, until the animal is chilled through. They are good nurses, and make fine lambs; their meat originally coarse and long in the grain, and white in its color, was much improved by Mr. Bakewell, and under his management, become superior to the other large, long wooled sheep. Some of the best flocks of this variety may, I believe, be found in the sheep folds of Mr. Dunn, and Mr. Wilkinson, in Albany county, or of Mr. Adcock, Mr. Musson and Mr. Clark, in Otsego county, all of whom have given much attention to this fine variety of sheep. Average produce in wool, I should think, from five to six pounds, though individuals are found, carrying fleeces of ten and twelve pounds! Price of good lambs, I believe, from ten to fifteen dollars.

The South Downs are as yet but little known in this country, but in my opinion, are decidedly better calculated than any other, for the domestic purposes of our farmers. They are of a medium

* The term "gummy" is in common use with farmers, and will be understood.

size, beautiful in their forms, large loined, broad chested, fine in the head, small boned, and fine in the fleece, which averages 4 lbs. in the ewes; the bucks reach to 7 lbs.; in quality it is equal to half blood merino, but stronger in its filament, and *entirely* impenetrable to storms of snow, sleet, or rain; they are regardless of our coldest weather, and possess hardier constitutions than any sheep I know. The wethers attain to about 28 lbs. per quarter, and are allowed to be the best mutton sheep in England, the meat being dark in color, short grained, mild in flavor, and juicy. They are excellent nurses, and quick feeders. Here again, I beg to be understood as alluding to the *pure* and *high bred* South Down; such as it is found in the sheep-folds of the great sheep-masters in Sussex; not the common, unimproved animal of the Downs, weighing 14 lbs. per quarter, and carrying but 2½ of wool.

As to prices—they are best ascertained from the sources of the respective breeds, and must vary much, according to the *established purity of the blood*, and the excellence of the individuals; the one a much more difficult point to ascertain than the other.

For the last three years, preparatory to commencing my own flock, I paid much attention to the sheep husbandry of this district; visited those who owned large flocks, and soon discovered that they were all on the decline; I corresponded with others, and found the introduction of the Saxony blood was universally followed by a decline of constitution, and all its attendant evils; excepting in one instance, where a gentleman wrote me, that he had just purchased a flock of Saxon merinos. He assured me that in Oneida county, they were a hardy, healthy sheep—shearing on an average about 3 lbs. of wool, *and the purer the Saxon blood the heavier was the fleece!!* This was so contrary to my own experience, having materially injured a flock of nearly two thousand grade-merinos by one single cross of the Saxony, that I still continued my plan of forming a flock from the *pure, full bred*, large merino sheep on the one part, and from the high bred sheep of Mr. Ellman's flock of South Downs on the other. Assisted by the indefatigable perseverance, acute discrimination, and previous knowledge of a friend, (whose father was concerned with Col. Humphrey in his various importations and sales of such sheep,) I collected, after 18 months' search, about thirty full bred merino sheep, pure as imported, *known* to be directly descended from those importations.—Their quality of wool is as fine as perhaps any grade Saxony flock around me. The ewes will average 4 lb. fleeces. My South Downs I imported from the celebrated flocks of Mr. Ellman, in England, whose two year old wether sheep beat all England last Christmas, at Smithfield, and took the first prize. He was judged to weigh 32 lbs. per quarter; and I am happy to say, has been presented to me by Mr. Ellman, as a specimen of excellence, and will probably arrive in this country before long, as he was to be shipped from London the first week in this month, for New-York. From Mr. Ellman, I procured six yearling ewes, and a *yearling* buck; the ewes have wintered in a yard with an *open* fence, and an open shed, closed only at the back; they lambed *there* from the 23d to the 28th of February, on which day the thermometer was as low as 4 deg. On the 1st, 2d, 3d, 4th and 5th March, the thermometer, in the shade, was from zero to as low as 6 deg. *below* zero, at sunrise! and yet my lambs, young as they were, never suffered in the least from the severity of the cold; they never showed the slightest consciousness of its intensity! and are allowed by all who call to see them, to be the finest lambs they ever saw. I find rapid demand for all I can spare from both my flocks, at liberal prices.—The engagements for my South Down buck, for *next* season, have been filled for some months past; and two days since Mr. Musson, a Leicestershire breeder, called to see him, when I took the opportunity of requesting he would weigh him—he very obligingly did so; and his exact weight was one hundred and fifty-nine pounds and a half. I have ventured on these minutiæ in regard to the *high bred* South Downs, as these sheep are very little known in the United States; and facts are more satisfactory than opinions: and again I must insist that I do not allude to the *unimproved* breed; I do not allude to the South Downs of Cully's day, from whose writings I have seen various extracts as descriptive of the breed, nor do I include the Hampshire Downs; I confine myself to the *high bred sheep* of the present day; and if any would oppose to them the fast rooted prejudice of high breeding being inseparable from delicacy, I would refer them to the facts above stated, and ask of them a personal inspection. I would further add, that it is an acknowledged fact, that Mr. Ellman's flock turns out more lambs than ewes! averaging 750 lambs annually, for several years, from 600 ewes.

A strong advocate myself of purity of blood, and a known line of ancestry, which confers excellence by descent, still, I believe, for this country, the most valuable description of sheep may be raised by judiciously crossing the merino and south downs, thus uniting the fine fleece of the one with the beautiful carcase of the other, and gaining at once a constitution suited to our climate.—This was done some years since, on the introduction of the merinos into England, and was attended by the most flattering success, the flock beating every other for the COMBINED excellence of wool and carcase. Both these breeds being fine, close woolled sheep, there is no extravagant dissimilarity, no wide contrasts to be amalgamated, and a more uniform character is easily obtained in the progeny, from which it will do to breed again. This is not the case with a cross between the long and short woolled varieties; the first cross will sometimes make a good animal, but when bred from again, the produce is uncertain, sometimes "taking back" on the long woolled parent, and sometimes on the opposite side; and when apparently combining in the fleece a united influence of the two breeds, a closer examination will shew an unevenness of length and filament that ill suits the manufacturer. R.

Maple Grove, Otsego, March 26, 1835.

DESTRUCTIVE INSECTS.

Not only thorns and thistles, but hosts of noxious insects have been inflicted on degenerate man. My attention has been chiefly directed against the latter evil.

The character of some of these insects will be described in treating of my warfare against them.

The first in my series, is probably of American origin, as in no system of entomology can I find a description of the insect which has proved so destructive to our peach trees. I have to rely on my own observation for its history and description. It was probably unobserved by us prior to the present century.

In the autumn of 1800, I first saw the fatal malady in the peach trees about Philadelphia; the next year it had reached Burlington, and thence continued its march northward, about twelve or fifteen miles a year. In 1807, in a choice collection of fruit of my own, every tree had the premonitory symptoms of the yellows: a few miles north escaped that year. Having made a careful dissection by splitting end barking several trees, I could discover no cause, but ravages of the worms between the bark and wood. Collecting a number of the worms, I confined them in glasses and hatched from them the perfect insect; a moth or miller, small in comparison with the worm; white or light grey, with dark spots, wings convolute, like a section of a crow-quill split longitudinally. This phalena or moth lays its eggs on the leaves of the peach tree; when hatched, the larva or maggot subsists itself first on the leaf, until it has acquired sufficient size and energy to migrate to a more suitable and permanent home for the winter: this is between the bark and wood of the tree, near the ground. Here it enlarges its domicil;—a sickly state of the tree follows, and if they congregate in sufficient numbers to circumvent the tree, certain death is the consequence, by intercepting the communication between the root and body of the tree.

The larva of the peach insect is herbivorous, and in this state of existence subsists on the tender lining of the bark; living in a cleanly manner, it deposites all filth outside the door, by the dark powdery appearance of which, its abode may be detected. In its chrysaloid state, its appearance is smooth and glassy. It frequently happens when seeking these worms, a chrysalis very different is found; this is the sirex or tailed wasp, the natural enemy of the peach worm; the sirex is a restless, fidgetty insect, resembling a wasp; its young, like that of other wasps and hornets, is carnivorous. It may be observed about the neighborhood of the peach worm's habitation, at the door of which it lays its egg; the product, a worm, creeps into the bowels of the peach worms, feeds on its carcase and occupies its coat. Its chrysalis, unlike that of the peach worm, is rough and filthy, caused by the sweat and writhing of the victim of its rapacity.

I have been thus particular in noticing the sirex, because, being a usurper of the abode of its foster parent, it has been false-

ly accused of being the mother of mischief, instead of a friendly ally, which should be patronized. Among others, the Sussex N. J. Register, had, about six years ago, a belligerent article against this supposed enemy.

Knowing that, even in a moderate degree, *heat* proves fatal to the cut-worm, I was led to try its effect on the peach worm; having placed several in the hollow of my hand, I found that water not uncomfortable to my skin, killed them. I thence commenced applying boiling water, from a watering pot (without the nose,) pouring it around the tree, about eighteen inches above the ground, in sufficient quantity to heat the bark; the quantity was varied according to the thickness of the bark and size of the tree; this proved completely successful for several years, and as longas it was continued. The time for using the heat, was the last of summer, and again the middle of the autumn, lest some might have escaped or more recently arrived.

The Pea Bug.—This may also be an American insect; we hear nothing of it abroad, and imported seed is without it. Its march through our country preceded that of the peach worm, about twenty-five years, and in like manner travelled from south to north about ten miles a year. This insect is too well known to need a description. It lays its eggs on the half grown pea-pod opposite each grain; the maggot, when hatched, penetrates the pea; the skin closes over and it extends itself to a large size, but contracts into the pupa state to one side the pea, from whence emerges in the spring the perfect bug, ready to perpetuate its species.

To counteract this evil, I have in my garden, sown imported clean seed, seed two years old, containing no live bugs, or I have scalded infected seed, with equal success; that is, the crop was but partially infected, and that I imputed to the proximity of the garden of my less careful neighbors.

These insects would be eliminated from our land, if every body would scald their peas on the day of sowing them; this is easily effected. The farmer may put two bushels into an open flour barrel with one head, pour on them one gallon of boiling and half a gallon of cold water mixed; cover the cask a few minutes; this would produce enough heat to kill the bugs, and would facilitate the germination of the peas.

I have not been able to ascertain the parentage of the insect that attacks the young fruit of the apricot, plum, and other smooth skin stone fruits. Its attacks are probably made in the early morning, (a time not particularly propitious to my habits of investigation.) formerly I gratuitously considered it a winged insect; it makes a couple of wounds, as if by pincers, in the skin of the fruit, in which it deposites an egg; the larva or maggot from this, eats to the centre or stone, injures the fruit and causes it to fall prematurely: afterwards the larva penetrates into the earth to winter there; in the spring it works its way to the surface, to renew a similar round of existence for its progeny. In the middle of my garden were two apricot trees, bearing abundance of fruit, but not one perfect. I removed the surface, and formed an area around each tree, similar to the gravelled walks; from these I had the fallen fruit removed daily to the piggery; after this I had plenty of good fruit. Near to these trees was a nectarine and several plum trees, being on my boundaries, were not treated in like manner; they produced no sound fruit. It would thence appear that the insect may not be winged or migratory to much extent, but may belong to the order *aptera*, wingless, and probably of the genus *phalangium*. Of these there are several species, all less and of shorter limbs than the well-known *father long-legs;* I know one variety with claws like a crab, capable of inflicting the above described wounds; they escape observation by their light color and slow movements. Other means than those, I pursued for the protection of these fruits. I have often seen narrow strips of sheepskin, wool on, fastened around the body of the tree before the blossoming season and continued during its ripening. In the absence of these, rolls or bats of coarse wool might answer the purpose against these crawlers, if such they may be. A still better security may be obtained by planting this kind of fruit trees in a yard where pigs and poultry could have free access during the fall of their fruit.

The Cut-worm.—This is the offspring of the *phalena devastator;* wings horizontal; white with small dark spots; under wings orange; conceals itself from the sun during the day; lays its eggs near the root of grasses. These worms are of a bluish color, and they travel only in the night; they cut off young cabbages, beans and corn; the latter is injured, but not destroyed by them. To shun its depredations in gardens, be careful to plant at a distance from any grass plat or lawn. I have lost an entire crop of late planted beans by them, by planting near a grass plat. Frequent superficial hoeing, in the middle of the day, by exposing to the sun, proves fatal to many of them.

Another familiar enemy is the *turnip fly.* I have witnessed many a crop of cabbage and cauliflower plants, also melon and cucumbers destroyed by these minute insects. To obviate this, on the first mentioned small seeds being sown, I have wetted the ground to the depth of an inch or more with boiling hot water; thus destroying the flies and their eggs, and at the same time expediting the germination of the seed. For melons and cucumbers, I sow and rake in radish or turnip seed, on and around each hill; the flies are attracted by these, their more favorite food, from the melons, &c. Against the striped bug, another destroyer of melons, a brood of young chickens is a sufficient protection for a whole garden.

Mr. Editor—I do not presume to think the above the only or best means of abating the evils we suffer from insects; my object is rather to elicit from others the result of their observation and experience; the subject, in my view, is important. Has any one, more fortunate than myself, discovered the insect, for insect it most probable is, that produces the deforming warts and threatened destruction of our plum trees? A knowledge of the agent might lead to the means of counteracting its influence. May we not hope that some means may be discovered for palliating the impending evils from the wheat insect, by fires or smoke of some offensive kind, as of horns or hoofs of animals, made in the evenings, at a particular stage of the opening ear. Many remedies and some of much practical utility have been suggested against the Hessian fly. We ought not to submit to nor look lightly on these pests. Ants, insignificant as they appear in our view, have been suffered to multiply to such an extent on the island of Grenada, that a premium of £20,000 sterling has been offered, from the public treasury, for the best plan for their destruction. Poison and fires are employed.

Let us exert our energies against the whole race of these *destructive insects;* let us devote a few hours each year to this warfare, and although we may not gather laurels, we shall assuredly reap a rich bounty.

SENEX.

Kinderhook, March, 1835.

Canandaigua, 3 Mo. 26th, 1835.

Respected Friend Jesse Buel,—Thine of 16th inst. duly reached me. As I am as ready to give as to receive instruction, I hope thou wilt be willing to give me thy opinion as to the proper depth of ploughing a field for corn. It contains 8 acres, is a rich sandy loam, leaning to the south. *(a)* At the time of threshing last fall, had the straw of 40 acres wheat drawn to it and laid in heaps; this will be spread and raked into the furrow. It was my intention to spread it last fall, believing it would become sufficiently tender to be separated by the coulter; but some of my friends who had tried it, found it not to answer, and advised my leaving it in heaps. It is my intention to sow plaster on the straw after it is spread. When ploughed, shall roll it, then harrow—and my opinion is, that it would be an advantage to roll after planting; *(b)* my oats and wheat have evidently been benefitted by the operation. I have come to the conclusion that most seeds vegetate sooner and stronger for having the earth pressed to them. Some late reading has produced a conviction, that farmers *generally place seeds too deep.* What is the proper depth for corn on *sandy loam? (c)* I always harrow my ground *before* sowing wheat.

Thou may think it strange that I should ask thy opinion respecting the depth of ploughing. I will here state that I usually plough 6 to 8 inches; but I have been staggered by the accounts of Earl Stimson's *(d)* abundant crops from 4 inch ploughing. I think such statements, unaccompanied by reasons for the practice, are calculated to do injury. I have always supposed, that crops were less likely to be injured either by wet or drought on deeply ploughed land, and practice has been in accordance with this belief. I am aware that manure may be placed so deep that it will not ferment—but will that be the case at 8 inches? *(e)* My experience says no.

There are certain principles in husbandry, which have obtained among the most enlightened agriculturists. If the adoption of those principles has resulted from a great variety of experiments, so as to satisfy us that they may safely be observed in most cases, would it not be proper, when a satisfactory result of a different practice has been given to the public, by one who stands high as a scientific farmer, to give also the reasons for such departure? Without such explanation, the inexperienced farmer may be led greatly astray. Among those principles, there are no two more important, in my opinion, than *deep ploughing*, and, that *when manure has been turned into the soil, it should lie undisturbed until the field is again laid down to grass. (f)* Now it will strike every practical farmer, that without an attention to the first, the last is impossible. Unless manure and sward are buried 7 or 8 inches, the cultivator cannot be used without disturbing them.

I observe thy recommendation to plant corn nearer than we have been accustomed to do it. I think we cannot use the cultivitor *(g)* where it is nearer than 3 feet; and where wheat is to be sown, I am of the opinion the ground would be in better order, should that implement pass both ways. It is my intention to sow my corn ground, notwithstand it is my opinion that it would be better husbandry for peas or barley to intervene.

Many are in the practice of ploughing oat stubble twice, and some 3 times, but we have discovered a much better method. As soon as the oat crop is taken off, go in with a sharp and heavy harrow and drag it thoroughly; the scattered oats and weeds will vegetate immediately, and, turned in with the stubble by one ploughing, will not only enrich the ground, but it will be left in better order for the wheat crop, than by the old practice.

Impressed with a belief that some legislative action is necessary, to induce our farmers to turn their attention to the raising of the mulberry, and propagation of silk worms, I would propose, that the Legislature should either furnish every poor-house farm, or compel the overseers of the poor to procure 200 mulberry trees *(h)* of good size, to furnish the infirm poor with a light and profitable employment.

If any of the foregoing remarks are worth extracting for the Cultivator, thou are at liberty to use them.

Thy respectful friend, WM. S. BURLING.

NOTES.

(a) We subscribe to the maxim, that *the deeper the tilth the more abundant the crop.* By tilth we mean the true soil, or the stratum which the plough turns over, and with which the vegetable matter, the food of plants, is well blended. The *proper* depth depends on the nature of the soil and subsoil. In corn ground, which is properly a soil of sandy, loamy or gravelly texture we think six to nine inches a suitable depth. The roots strike fully to this depth, if there is food for them; and this serves to brace the stock, and to avert the effects of drought.

(b) It is undoubtedly beneficial to press the earth to seeds, particularly small and light ones, with a roller; but in planting corn our practice is to substitute the planter's foot for the roller, who steps upon each hill.

(c) All seeds should be as superficially covered as a due regard to keeping them moist will permit. Seeds will not germinate without the combined agency of moisture, heat, and air. If buried deep, they in a measure lose the influence of the two latter of those agents. Rolling, or otherwise pressing the earth upon the seeds, slightly covered, tends to prevent the evaporation of the moisture necessary to their germination.

(d) Mr. Stimpson's farm, we understand from a gentleman of geological science, is of a peculiar kind, to which ordinary rules will not apply. It is principally underlaid by a porous rock, the debris of which, instead of possessing fertilizing qualities, is considered deleterious. If we are rightly informed Mr. Stimson's system of shallow ploughing is rather a matter of necessity. His system does not answer our turn.

(e) The fermentation of manure, like the germination of the seed, requires the presence of heat and air, as well as of moisture. The fermentation may be retarded by burying it deep; but I have ever found, that, in corn ground, it does ferment, in time for the wants of the crop, at the depth of eight inches.

(f) Upon this point we have some doubts, although the rule laid down tallies with the opinions of Lorrain, whose authority we highly respect. While manure is undergoing fermentation, its fertilizing properties, the gaseous portions, rise towards the surface; but after fermentation has exhausted its powers, the tendency of the residuum is to sink deeper in the soil. Whether, therefore the advantage of having rotted dung near the surface, would or would not be more than counterbalanced by the wasting influence upon it of the winds and sun, is a question we are not prepared to decide.

(g) We plant 3 by 2½ feet, and work the cultivator but one way; but were we disposed to have rows both ways, *our* Cultivator would readily pass between them, as its cutting breadth may be contracted to 20 inches. We think this would be an improvement, by keeping the surface more mellow and clean, matters of no little moment.

(h) It would save expense were this matter undertaken by the overseers, without legislative provision. An ounce of mulberry seeds would cost, at the extent, but 50 cents, and, if managed with care, would produce from two to three thousand trees, which would afford the material for silk almost as soon as large trees. And besides, we are afraid that any appeal for legislative aid to agriculture will be altogether disregarded, unless it can be made to subserve political party purposes.

ON IMPROVING BREEDS OF STOCK.

Trumbull Co. Ohio, Feb. 1st, 1835.

J. BUEL, Sir.—In reading the Cultivator, I noticed your invitation to the subscribers to communicate their own observations or experience on any subject that comes within the object of your publication. Not accustomed to write for the press, I have no expectation of producing any thing worthy to be presented to the public, for its grammatical correctness, or elegance of composition; but if my observations shall bring the talents of abler writers before the public on the subject selected, it may be highly beneficial to the community.

In the first number of the Cultivator, pages 8 and 9, is found an epitome of Mr. H. Cline's method of improving the breed of animals by putting females of a larger variety, to males of a smaller. The same ideas were several years past copied from agricultural papers into political ones in this section of the country. If I had not seen the evil effects of the theory when reduced to practice, I should not have troubled you with my observations on the subject. For forty years I have been no inattentive observer of breeding and rearing of our domestic animals. Mr. Cline's ideas may be applicable in Europe, but they are directly the reverse of my observations in this country. It is not a little surprising that the example he gave of the ill effects of the Yorkshire farmers putting their stallions to much larger mares than usual, did not lead him to doubt the correctness of his theory. He in another section says, the great improvement in the breed of horses in England arose from crossing native mares with the diminutive Barb and Arabian stallions. But may it not be reasonably supposed, that the improvement was rather the result of beauty of form, and the extraordinary muscular powers of the animal, than of his diminutive size? May it not be reasonably presumed, that those horses had much depreciated from their natural size on the fertile fields of Judea, in the days of Solomon, by passing through a thousand generations in a country and climate less congenial to their attaining their natural size? It appears to be a fact, that these horses have attained a much larger size in England, since they were brought there, less than two centuries ago, not by crossing with native mares, but crossing the Barb with the Arabian. And the purity of the breed of the present English blood horse is ascertained by tracing his pedigree on both male and female side, to pure oriental blood, and a cross of the east breed twenty generations back would ruin his character. It is also admitted that no improvement has been made in England within the last one hundred years, by importing Barb, Arabian, or Turkish stallions.

The theory of Mr. Cline, that the larger flow of blood from the large female to the fœtus, and the natural effect to produce a larger extension of the heart and arteries, with an increased growth of the surrounding bones, muscles and appendages, is admitted: and that the larger quantity of air, brought in contact with blood in the lungs in each inspiration, serves to produce an increase of appetite, is not doubted; but that the powers of digestion are proportionably increased, is not quite so apparent. It is apprehended that the digestion of food so as to change its nutritious parts into chyle, to be taken up by the lacteal veins and carried into the circulating fluids, fit to be incorporated into parts of the living system, is only secondarily dependant on air received into the lungs: but primarily on the viscera of the abdomen or belly. It does not appear to be a fact, that those animals that consume the most food in proportion to their size, fatten the most readily. It is believed that those animals whose chests are disproportionably large, are as remarkably deficient in their hind quarters; are usually large eaters, but slow to fatten, and are such as are not readily purchased for the market. Such has usually been the product of both cattle and horses, as far as I have had the opportunity of seeing the result of a small variety of males put to large females, and the greater the difference in the variety, the greater disproportion between the fore and hind parts of the offspring. My own observations on breeding from large mares and small horses has been—

that the offspring was so disproportionally deep through the chest —thick and bony through the shoulders, as greatly to endanger the life of the mother—and I have known several valuable mares that have died or been ruined from that cause. The offspring has very commonly a deep chest, rendered flat by the pressure of large heavy shoulders; a long back; narrow weak loin; narrow short contracted hips; long large boned limbs, with small muscles and tendons or cords. It is not asserted that such is the invariable result, but it is believed there are few colts from such parents, but show more or less of the above cited disproportions. On the other hand it is believed, that our best horses are the product of males of a larger variety than the females, and often when the disproportion was very great; and I have no recollection of any injury to a small mare, from being in foal by a large horse.

On the subject of breeding cattle from a male of a variety far larger than the female, I have had but a short opportunity of witnessing its results. Not far from the year 1800, some English bulls of a large variety, I think they were called the Yorkshire breed, were purchased at or near Frogs Neck, and taken to Addison county, Vermont; when 6 years old, they were the largest and handsomest cattle I have ever seen—were remarkably broad through the breast and stifle. They were put to cows of the common breed; the calves, when dropped, were commonly smaller than those from bulls of the common breed, but without any extra feed, they attained a much larger size, and were far handsomer animals; the heifers better milkers; ¾ blood calves approximated nearer in form to full blood; but one of ¾ blood could readily be distinguished from the common breed. But as I left that county in 1808, I had but a short time to witness the result of the cross.

Mr. Cline recommends crossing the large English sow, with the small China boar, but your friend, L. F. Allen, Esq. has probably adopted a more rational method, by a vice versa cross. I have never derived much benefit by crossing the common sow with the China boar.

I have only seen the result on sheep, by crossing the common ewe with the Merino or Saxon buck. The result has been a smaller and less hardy breed of sheep, with shorter and finer wool; but I think not any larger quantity. I should like to learn the result of crossing the large fine wooled English buck, with the Merino, or Saxon ewes. F.

ADVANTAGES OF MIXED HUSBANDRY.

North Canton, March 20, 1835.

J. Buel—Much is said in this section on the subject of farming, and particularly on raising stock, as being more profitable than raising grain. There are contrary opinions maintained with considerable spirit on both sides. Some contend that farmers should turn their whole attention to raising cattle and sheep, except grain and pork sufficient for the family's use—while on the other hand it is maintained that grain should be the staple of our country, connected with a sufficiency of stock to eat the grass that grows on our lands that are not tilled. I propose to examine the subject, and commit the result to your consideration. If you think it worthy of a place in the Cultivator, it is at your service.

In treating this subject it is necessary to turn our attention to an earlier period of the settlement of this country. Thirty years, or thereabouts, have passed away since the settlement first commenced; and about 25 years may be considered the time when this section began to excite the attention of the eastern emigrants, and for 15 years the settlement advanced with considerable rapidity, since which time the emigration to the west has occasioned a stand in respect to the settlement of this county by emigrants. It happened in this county, as in all others, the ridge lands (for our lands principally lie in swells) were cleared first, and produced excellent crops of winter wheat, consequently we believed that we had an excellent wheat country. But since our farms have become cleared, we have found our mistake; and great losses have been experienced by summer fallowing, which has had a tendency to divert the attention of those farmers who had been fortunate enough to pay for their farms (by good economy or good luck while raising new land crops) from the raising of grain almost entirely, and substituting the raising of cattle and sheep, except so much grain as is necessary for the consumption of their families. Although the raising of stock is considerably practised and more considerably advocated here, as being by far the most profitable way of farming, yet I will undertake to show the contrary,—that is, that the farmer first should raise all the grain that he can without injuring his farm; secondly, he should keep all the cows he can on the remainder; thirdly, make all the butter and cheese he can—and lastly, fatten as much pork as the dairy will keep well. And for a fair test, I will suppose two farms of 100 acres of improvement, each of equal goodness; the one to be stocked with as many cattle as is necessary; the other to raise grain and keep a dairy. In the first place, the cattle farm shall be taken into consideration, and in order that a fair trial should be had, I will allow the farmer only one acre for tilling, which is enough for a garden, for I would not be willing that he should confute his position in the beginning—for it is very plain that if he can raise cattle to greater profit, that he had better do so, and buy his bread stuff, and spread his manure on his mowing land. We will suppose then, that a farm of one hundred acres improved land will keep 60 head of cattle, besides a team, which will be necessary in both cases—say 15 calves, 15 yearlings, 15 two-year olds, and 15 cows, making 60 in all, which I know to be rather over, than under the true number; he will have 60 cattle to winter, which will take 60 acres of meadow to furnish the fodder, leaving 40 only for summering his stock. He can sell yearly 15 two-year-olds in the fall, after they are wintered and summered, $12 per head, 12 + 15 = 180 dollars; butter and cheese, $15 per cow, 15 + 15 = 225 dollars; 15 pigs fattened on the dairy slop, 150 pounds each, $4 per hundred, $90; two old cows, fattened, $18 each, $36, and supplied by three year old heifers, to keep the stock good. You have then left for the nett proceeds of the farm, after deducting $60 for securing hay, $471. I then suppose that 60 out of 100 acres improved land, is a fair average of plough land in this county, and that three crops is all that should be taken from a field before it is seeded down, and should be seeded with the third crop invariably. I then have six fields for the plough; one field to be ploughed yearly, one to be laid down yearly; making thirty under the plough at once, and leaving 70 for grass and cattle, which I will reckon at the same rate that I did the other 100 acres. Supposing then, the 60 head of cattle from cows to calves to be equal to 50 cows, putting the calves on to the yearlings and two-year-olds, making them equal to the two-year-olds and cows; then 70 acres would keep 35 cows; then as above the butter and cheese at $15 per cow 35 + 15 = 525 dollars; 36 pigs fattened on the dairy slops, 150 lbs. each, $4 per hundred, $210; three fattened cows, $18 + 3 = 54 dollars; 30 calves $3 per head, $90, making $879. I then have 10 acres corn, 40 bushels per acre, 50 cents per bushel, $200; 10 acres of spring wheat, 15 bushels per acre, $1 per bushel, $150. Spring wheat is the only wheat crop that we can depend upon in this county, as a general rule. Ten acres oats, 80 bush. per acre, 25 cts. per bush. $75, making $425.—Total $1,304.—To be deducted from this amount, there is the wages of two hired men for six months, $12 per month, $144; one boy, $5 per month, $30; one woman $4 per month, to take care of the dairy, $24; two years' board at $1 per week, $104, making $302, taken from $1,304—leaves a balance of $1,002 for the nett proceeds of the grain and dairy farm; deducting the nett proceeds of the cattle farm, $471, from this, leaves a balance in favor of the grain and dairy farm of $531. I have supposed each farm to be equally well fenced, and all necessary farming tools and carriages. If it be objected that more worth of farming tools is required on the grain farm, it will not balance the amount of capital owned by the cattle grower, for when you take into consideration the capital employed by each, you will find that much the greatest profit is realized from the same amount of capital on the grain farm,—and that certainly is the best way, that makes the greatest profit from the same capital. It may be seen from the above calculation that a family may be supported, whose support costs $500, from the grain and dairy farm, and leave a handsome income saved at the year's end; while on the other farm, the husbandman with as expensive a family, would find himself in the rear at the year's end. It may be seen that a dairy and grain farm is more profitable than a cattle farm—that it is more profitable than a dairy farm—and that it is more profitable than a grain farm; for it would be impossible to keep a farm in good heart, without cattle to make manure, and it would be equally impossible to make our dry lands produce as good pasture without the plough. For a short time our lands would produce good grasses by what is called top-dressing with manures, but too soon the grass would become wiry and tough, and our cattle would,

if they could have the choice, leave the old for the new laid pasture.

But why is it, that our most wealthy farmers protest that they make property faster now, than they did when they raised grain? For a very plain reason—they say one thing, and do another.—They say they raise cattle and make profit by it—but it is not so; they buy their cattle reared—winter them perhaps one winter, and sell them at a profit,—and why? Because they began the world with some capital, or have been fortunate enough to pay for their farms, while they were raising grain, and thereby became able to make additions to their farms, and to stock them with cattle, and so receive a handsome income without taking into consideration the amount of capital employed. I have no exceptions to make to this way of farming, because one man is richer than another; but this doctrine will not do to preach to a man that has not yet capital to stock his farm, and must support his family from his farm. If this state is ever made to support its man on every rood, I am sure that it will not be by cattle husbandry, nor by sheep, but by the highest state of agriculture, and principally by grain-growing, with a proper proportion of cattle, when every thing is brought into requisition that the lights of science has and will unfold, and made to bear on the culture of the soil; then not unlikely may our fields compare with the fields of any country on the same parallel of latitude. I trust the time is not far distant when the objections that the farmer cannot get manure for his land will not be heard.

If the above should find its way into the Cultivator, I should feel rewarded if some one who has time and ability, should lend their aid, through its columns, in support of grain-growing, for I find there is much said in every number of the Cultivator on the breeding of cattle and sheep. It is time for the grain-grower to lend his aid. D. S. OLIN.

In the last number of the first volume of the Cultivator, there is a partial account of making sugar from potatoes. "A certain quantity of sulphuric acid or vitriol is then mixed with it," as stated in the Cultivator. Please to say in what proportions. "This is to be purified from the acid by adding quick lime." Also what proportion of lime and what the probable cost per cwt. You will oblige a friend by giving information on the above subject.*

Yours, T. D. OLIN, P. M.

* We are unable to respond to these queries.

J. Buel, Esq.—Sir—I wish to inquire, through the medium of the "Cultivator," whether the common red clover is hurtful to an orchard. As I have no experience on this point, and wish to seed an orchard during the current year, it is my desire to proceed understandingly. I have somewhere seen it stated, that it was not hurtful to an orchard to seed with clover: provided, however, it was turned under in the course of two or three years. Your own experience and opinion are respectfully solicited.

I am informed that, for a field crop, you prefer the China Bean. The prevalent opinion in this district of country is, that no beans are saleable except the *white*. Does the China Bean command as high a price, as an article of merchandize, as the white, or any other? I will also inquire—does plaister benefit the bean crop?

Have the goodness to instruct the readers of the Cultivator in relation to the culture of carrots. What soil, and what preparation of soil do they require—when and how sown, and what attention must be given between sowing and harvesting.

Respectfully, &c. A. Z.

Saratoga County, 25th March, 1835.

REPLY OF THE CONDUCTOR.

We do not think red clover prejudicial to an orchard. It is not so exhausting as other crops, though it is true, it derives its nourishment from that part of the soil where the roots of the trees penetrate, more than ordinary crops. Yet it is calculated, by its roots, which seldom abide more than two seasons, to divide and mellow the soil, and thereby render it more permeable to the roots of the trees. Such are the opinions we have formed from experience and reflection.

Our preference for the China, over the white bean, as a field crop, arises from several causes: 1. It is intrinsically the richest and best bean; 2. It ripens early, and comes off in time for a crop of winter grain; 3. We think it gives the best crop; and 4. It brings *us* the best price. Yet we ought in candor to add, that it requires the best ground. The white bean will grow where this will starve. The white bean *is* the most saleable. We think plaister may benefit the bean crop; and recommend that it be sown at the rate of a bushel to the acre, before the last ploughing for the crop.

The carrot is undoubtedly among the most productive crops, and we think it one of the most expensive ones, *on account af the great labor it requires in hand-weeding*, and before the plants acquire much size. The soil which it prefers, is a rich moist loam, which should be ploughed deep, and well manured. The seeds must be sown by the hand, as the drill barrow will not scatter them equally. The preferable way is, after the ground is well pulverized and levelled, to stretch a garden line, the longer the better, draw a shallow drill with the hoe, scatter the seed in the drill, cover lightly, and *press the earth upon the covered seed*, with a hoe or roller. The drills may be twelve to eighteen inches apart. They may be sown early in May. The ruta-baga is sown the last of June, or first of July. The labor on the carrot crop before the first of July, is more than is required for the whole turnip crop, and there is no great difference in the product or value of the two crops.

Canaan-Centre, March 23d, 1835.

Sir—As the great object of the Cultivator is to disseminate useful knowledge among farmers, from various sources, and as its columns are open to all, it is a source of regret to me that amongst your numerous list of subscribers, more have not improved such an important medium of communication, to make public the result of their experiments, and their partial knowledge in relation to the great work of agriculture. The field is certainly extensive; as there is no subject within its range the description of which would not be useful to some; and the views of the practical farmers, derived from observations or from experiments in the science, would benefit all. The aversion of many farmers to experiments in husbandry, renders it more important that those who try them, or acquire any thing new or useful in any way, should make it public, that the weight of testimony may be such as to remove doubt from all minds; so when any thing is advanced that admits of doubt, or is contrary to the opinions of others, a discussion of the subject would give all an opportunity to judge more correctly. In the January number of the Cultivator, I noticed a communication signed Amateur, giving a description of some old fashioned Merino sheep, which were undoubtedly very superior ones, and such as any wool grower might be proud of possessing; but he makes a quotation from a correspondent of his, which does not accord with my view of the subject. His correspondent says, "sheep of the above description are now very scarce, and will soon be in great demand, for all wool growers are aiming at small fine fleeces, whose constitution will not stand severe wet and exposure to cold, and thinks nothing but a resort to the old fashioned merino will help it." My object in noticing this, is to correct an impression which it has a tendency to make on the minds of some, that Saxony sheep must eventually give place to merinos. My opinion is, that a judicious cross of Saxony on merino is nearly as great an improvement as merino on native, and should not be abandoned by wool growers on the scale of profit, as I believe a flock of merinos may be so improved by a Saxony cross, as to make the wool worth from fifteen to twenty cents per pound more, without a corresponding deficiency in weight. I arrive at this conclusion not by any visionary calculation, but by the result of actual experience, having for the last six years greatly improved my flock by a Saxony cross without any diminution in weight. There is undoubtedly a great fault with wool growers in the selection of bucks, either from want of judgment, or attention, or from fear of expense; and the scarcity of Saxony bucks has brought into use all that have been imported, or raised, whether they had good qualities or not; this has had a tendency to depreciate the value of them, and should be guarded against; good qualities being as essential in them as in other animals intended for breeding. Any breed of sheep may be greatly improved by good management, though more easily depreciated by bad. No one supposes but what merinos are far superior to native, and to cross them is a great improvement; yet I recollect when merinos were first introduced into the country, the same objections were made to them that are now made to Saxony; and the remark, that Saxonys have more delicate constitutions than heavy fleeced merinos, and will not endure wet and cold as well, is true, and is an evidence of the superior quality of the fleece, and admonishes the wool grower, that they may be kept from dampness from any source; without this precaution any sheep's fleece will grow coarse and harsher. Such ewes as Amateur describes, their fleeces weighing 4½ lbs. would cross with a good Saxony buck to great profit, and would produce far better stock in my opinion, than his merino bucks, on Saxony ewes, or on ewes of the same breed.

As the season for shearing sheep is at hand, and as I have noticed a great difference in the appearance of different lots of wool of similar quality, owing to different management, I suppose a few

hints on the subject might be serviceable to some. It is important that the external appearance of a lot of wool should be good, as well as any other article intended for market; for besides the advantage of a little advance in price, we have the satisfaction of producing an article that displays neatness and skill. After sheep are well washed, they should be kept in a clean pasture till the harshness produced by washing is overcome; eight or ten days is sufficient in dry weather, but wet will require a longer time. Fleeces cannot he made to appear well, unless they are taken off without being torn, and to effect this, a careful attention to the comfort of the sheep should be observed, which will of course have a tendency to keep them from struggling. I approve of a scaffold 18 or 20 inches high, made of planed boards, on which I set the sheep, shearing the left side first, parting the wool from one flank to the other, and shaving towards the back; then turn the sheep round and shear from the back, taking off the belly as I go down; in this way the fleece is kept all the time out of reach of their feet, and may be kept whole as when on the sheep. The fleece should then be doubled so as to have the shoulders appear on the outside, and the fleece when rolled, should not be more than from 10 to 15 inches in length. It should be rolled very tight, and the knee placed on it till the cord is drawn under and tied. It is often necessary to wind the cord once around on each side, half way from the middle to the end, but never should be carried in a contrary direction around the ends, unless the fleece is very much torn.—Cotton cord should not be used; and wool should not be put into sacks that have had cotton in them, as whatever particles of it may chance to adhere to the wool, will in dying take a different color, and give the manufacturer the trouble of picking them out of the cloth. Shears should be ground to an edge on the back, from the points up about two inches; this will be found to be a great improvement, as they will enter the wool much easier.

J. Buel, Esq. DANIEL S. CURTIS.

VALUE OF FRUIT.

Good fruit will be admitted by all, to be one of the almost indispensable comforts of life. Then why do so many farmers neglect to procure it—when, with a little *pleasure*, (I will not call it trouble,) in grafting and inoculating, it could be so easily effected? Many farmers live, or rather, get along, from year to year, without making any effort to accomplish so desirable an object. To such, these remarks are directed, (for to none others would they apply,) in order to stimulate them to action. And as this month is the season for transplanting fruit trees, I presume none will neglect to obtain a supply, and those of the most approved kinds. We should always be well provided with young trees, particularly the peach, as this is a short lived tree at longest, that, as the old ones decay, we may replace them, and thus keep our stock good. I have noticed with regret, that many peach orchards are suffered to decay, and some have entirely disappeared, without a single effort of the proprietors to replenish them. Surely so delicious a fruit is worth paying the utmost attention to. What incalculable benefit may be derived from a little attention—for instance, if a farmer spend one day in grafting, one in inoculating, another in transplanting fruit trees—how is he rewarded ten-fold for his labor in beholding his efforts crowned with success—to say nothing of the profits and enjoyments to be derived therefrom? I am inclined to believe, that an orchard of well selected fruit, where we are not contiguous to a good market for it, might be made profitable in fattening our pork. If farmers would keep an accurate account of the expense of fattening their pork, in the usual method of feeding corn, I think they would readily find that they were losing money. Hence the necessity of devising some cheaper method. I purpose to make an experiment with boiled apples, mixed with a given quantity of meal. Will some other farmers make some experiments of this kind, and communicate the result. Respectfully, GEO. WILLETS.

Skaneateles, Oonndaga county, 1835.

Albany, 16*th April*, 1835.

J. Buel, Esq.—Dear Sir—In an early number of the Cultivator, vol. 1, p. 63, you inserted a short account of my growing tares and turnips as food for stock. Last season I raised both of them again: the tares were an abundant crop, as to herbage, but like those of the preceding year, promised to yield but little seed, so I had them mowed and made into hay. The produce of seed is so small, as to render the continued cultivation of them impracticable. How they might succeed in other parts of the U. States, I cannot tell; but the same difficulty had been found by Mr. Livingston, several years ago, as is stated in Nicholson's Farmers' Assistant.

For the Swedish turnips, or ruta baga, I had seven acres of land which had borne a crop of oats the preceding summer, and had been ploughed as soon as possible after they were carted off. This was ploughed and harrowed till clean, and the seed was drilled in rows at 22 inches distance, at different times, from the 24th June to the 8th July, as the land could be got ready. They were hoed once over by 1st August, and a second time by the 30th. The great and unusual heat of the summer of 1834, hurt their growth very much, and rendered many of them unsound, so that the tops came off when pulled. The high parts of the field produced better turnips than the low, though these were all underdrained. From the 18th October to the 21st November, we were employed in pulling, drawing home and securing them. The produce from seven acres was less than that of the preceding year from five acres. I had only about 2500 bushels, and this I can attribute only to the extreme heat and drought of the season. I had them just as before, in large piles, and by this means lost full half my crop, for the two seasons were entirely different.

Your plan, as given in the Cultivator, vol. 1, p. 52, is the only safe one, and had I followed it, I should probably have saved more than 1000 bushels of turnips. In December they began to heat, and continued heating all through the severe month of January, till I lost half my crop nearly. The labor of covering such large piles is very great, and they ought by all means to be avoided. The Swedish turnip is a most valuable root, and grows well in the northern parts of the United States; but as to its paying on a large scale, I have some doubts, but an acre or two must be of great service on any farm. All stock are fond of Swedish turnips, and thrive on them; cattle which have never tasted them before, eat them voraciously the first opportunity. Heavy sheep cannot be wintered without them, so as to be kept up to the mark, either in mutton or wool, for no quantity of grain can make up for the want of moist food, such as turnips, mangel wurtzel, &c. A large allowance of such food would probably be injurious to the quality of very fine wool, though it might add to the quantity.

Yours truly, S. HAWES.

Elements of Practical Agriculture,

By David Low, Professor of Agriculture, &c.

PLOUGHING.

[The most common operations in husbandry are frequently the worst performed. Accustomed to them from boyhood, we acquire the habit of doing them mechanically, without scanning well their object, or investigating the principles upon which they ought to be conducted. Our ploughmen would think themselves insulted, if told they did not know how to plough their grounds well. And yet without intending to charge them with this defect of knowledge, we are free to say, we do not find hardly two fields in fifty, *ploughed well*. There are three principal objects that should be aimed at in ploughing:—1. To break up the *whole* surface of the field; 2. To give the *greatest exposure* of fresh earth to the atmosphere; and 3. To induce the greatest pulverization of soil. It is too much the practice to *cut and cover*, and to lay the furrow-slice flat, which neither gives the greatest exposure nor induces the best pulverization. We are persuaded, that what we are about to offer upon this subject, may be read with advantage by even the best ploughmen, however trite and well understood the subject may appear. The principle illustrated in figure 6, is particularly important.]

THE PLOUGH.

By means of this instrument the earth is to be turned over to a given depth: and this is to be effected by cutting from the ground successive sods or slices of earth, so that each sod or slice shall be raised up and turned over, and all the sods or slices laid resting upon each other, in such a manner as that an entire new surface shall be exposed to the atmosphere.

In the following figures, let A B C D represent the end or transverse section of the slice of earth which is to be turned over.

The slice is first to be raised from the position in which it lies in fig. 1: it is next to be placed in the position shown in fig. 2: and it is finally to be placed in that represented in fig. 3.

In the diagram, fig. 4, let A B C D, corresponding with the same letters in figs. 1, 2, 3, represent a transverse section of the slice of earth which is to be turned over. This slice is first to be raised from its horizontal position A B C D, by being turned upon its corner C as a pivot, and placed in the position C E F G, corres-

Fig. 1. Fig. 2. Fig. 3.

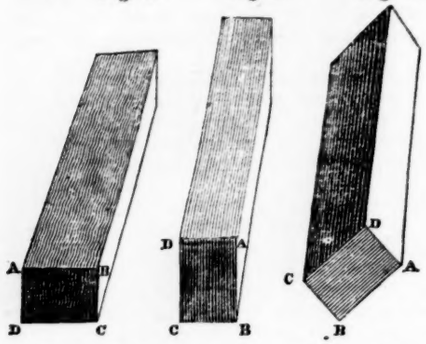
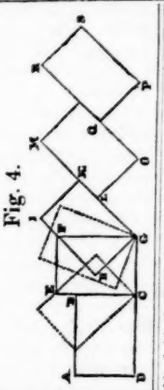


Fig. 4.



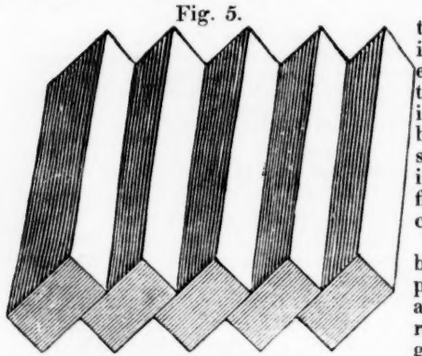
ponding with that of fig. 2. It is then to be turned upon its corner G as on a pivot, and laid in the position G H I K, corresponding with that of fig. 3. In this manner, the side D C, which was formerly underneath, will be above, namely, in the position HI; and if successive slices shall be thus reversed, they will rest upon each other in the manner shown by the sections of the slices P Q R S, O L M N, and G H I K.

The angle of inclination at which these different slices will naturally rest upon each other in the manner shown in the figure, will depend upon the proportion which the width of the slices bears to their depth; and that the greatest extent of surface may be exposed to the air, the angle of their inclination will be 45°. In order, therefore, that the slices may be at this angle, the proportion which the width of the slices bears to their depth is to be determined; and this can be done by simple calculation; for it can be shown that the width of the slice A B, being the hypothenuse of an isosceles right-angled triangle, the depth of the slice B C, will be one of the sides. Supposing, therefore, the width of the sod A B to be ten inches, the depth B C will, by calculation, be 7.071 inches.

If, then, beginning at one side of a field, we shall cut off a slice of earth, the entire length of this field, and place in the position P Q R S, fig. 4, and then cut off a second slice, and place it in the position O L M N, and then a third slice, and place it in the position G H I K, and so on, the various slices will rest upon each other at a given angle, in the manner represented.

A similar operation is to be performed by the plough. Beginning at the right-hand side of the field or ridge to be ploughed, a sod, which we shall now call a furrow-slice, is to be cut from the firm ground, raised up and turned over. A second furrow-slice is in like manner to be cut from the firm ground, raised up and turned over, and so on. In this manner, an entire new surface will be exposed to the atmosphere, and the successive furrow-slices laid resting upon each other, thus:—

Fig. 5.

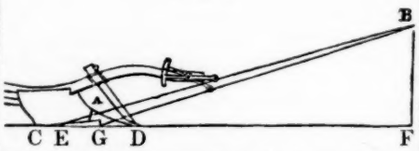


An essential property of the plough is, that it shall move in the earth with a steady motion; and the giving to it, the form and combination of parts necessary for that purpose, is one of the main difficulties attending its construction.

Were it ascertained by experiment on the plough when at work, at a given depth of furrow, and in soil of a given texture, that a cord attached to any point A, fig. 6, and drawn in the oblique direction A B, would so pull forward the plough, that it should press uniformly upon the earth at all points, from C to D, so that the share should neither tend to point upwards nor downwards, but should move horizontally forward, then it is to some part of this line that the moving power should be applied; and further it is known from the principles of mechanics, that it matters not, in so far as regards the force exerted, to what precise part of this line the power is applied. Now, without entering into any mathematical investigation of the principles upon which this line is to determined, it is to be observed, that in a well-made plough, formed on the principles pointed out, this line, drawn from the usual point of attachment of the draught on the collars of the working cattle, will intersect the sole of the plough at E, a little behind the setting on of the share, and a little to the right of the plane of the left side of the instrument.

Now, knowing the height at which the point of draught is to be attached to the shoulders of the working cattle, let us suppose 4 feet, and the distance from the point of the share at which the animals of draught can be conveniently yoked, let us suppose 12 feet, then laying off D F 12 feet, and F B 4 feet, and drawing B E, it follows that the point at the end of the beam, to which the draught is attached, may be placed in any part of the line B E. So that whatever be the length which we shall give to the beam, the line in question will denote the end of it, or the point to which the draught is to be attached.

Fig. 6.



But the angle which the line E B forms with the surface, is not, as can be shown, constant, but varies with the depth ploughed, and the tenacity of the soil. That the instrument may suit itself to these variations, as well as that any defects in the form of its parts may be counteracted, and that the line of draught may be placed in that position which is required to pull forward the plough, without there being any tendency in the share to sink into the ground or rise out of it, the bridle is fixed at the end of the beam, so as to elevate or depress the line of draught as may be required.—Should the plough, for example, tend to go deeper into the earth, the line of draught is to be lowered by means of the bridle, so that it shall form a greater angle B G F; the effect of which will be to counteract the tendency which the plough has to go deeper. The same effect will be produced by shortening the traces by which the horses are attached to the draught and thus increasing the angle. In like manner, by means of the bridle, the point of draught can be shifted to the right or to the left. If the point of the share tends to turn to the left hand, into the firm ground, the line of draught is shifted more to the left, and if to the right hand, it is shifted more to the right. This adjusting of the plough's motion is easy, and is performed by the ploughman, until he feels that the plough continues to *swim fair*, to use his own technical language; that is, until he feels, which he does at once, that it continues to move horizontally forward, without any tendency to turn to the right or left, or to rise from the earth or to sink into it. A well constructed plough of this kind, therefore, needs no wheels or other devices, to steady its motion; the effect being produced by merely altering the direction of the line of draught.

Miscellaneous.

From the Genesee Farmer.

CULTURE OF THE RUTA BAGA.

The following is an account of the method I pursued in the cultivation of ruta baga. I sowed three-fourths of an acre, the most of which had been well manured the year preceding; soil, a deep sandy loam. The land was ploughed three times, and then thrown into low ridges, about 20 inches apart. These were smoothed down with a hoe, and a man followed with a sharpened stick to make a light drill in the top of the ridge. The seed was sown in these drills with a tin cup, which had two small holes punched in the bottom—in the top was fixed a tight wooden cover, to which was attached an upright handle two feet in length. The sower should walk at an even pace, shaking the cup gently. A boy followed with a light roller, which completed the work. Several rows were sown on the ridges as they were left by the plough, and no difference could be observed between them and the others. A rain, however, followed the sowing. Had it continued dry, I doubt whether these rows would have succeeded as well as the others. I used one pound of seed. This, I am aware, would be considered a great deal; but the cost of the seed is trifling in

comparison with the value of the privilege of having a plant just where we want it. As soon as they were in the rough leaf, I thinned them out at from eight to twelve inches distance from each other.

1834.	*Expense of Cultivation.*	Dr.
4 mo.	26—Ploughing, ⅝ of a day, 12s	$1 00
6 "	2— do do "	1 00
6 "	30— do ½ day, "	0 75
6 "	30—Ridging, ¼ day, "	0 38
6 "	30—½ day, sowing, three men and one boy, at 5s..	1 25
	Seed, 1 lb. 8s	1 00
7 "	22—Weeding and thinning, 12 days, 5s	7 50
7 "	21—Weeding, 2½ days, 5s	1 56
8 "	16— do 1½ days, 5s	94
11 "	8—Drawing from the ground, five days, 5s	3 12
	Covering, one day, 5s.	62
	Interest on land at $50 per acre,	1 75
		$20 87

Cr.		
By 40 bushels,	sold at 2s.	$10 00
By 486 do.	certainly worth 1s.	60 75
526 bushels.		$70 75
	Nett gain,	$49 82

But in my opinion, when corn is worth 50 cents the bushel, turnips ought not to be estimated as low as 12½ cents. I have not, however, made experiments sufficiently decisive to show what the relative value is, but I have fattened three oxen upon them, and those who had opportunities of judging, acknowledged that animals could hardly thrive better than they did.

Errors in Cultivation.—I think, unless for house use, they should not be sown later than the 15th of 6th mo. The first weeding was put off much too long—labor more than doubled on that account. They should be sown 2½ or three feet apart, that the cultivator may be used. WM. R. SMITH.

Field Culture of Beans.—Beans may be cultivated in drills or in hills. They are a valuable crop; and with good care, are as profitable as a wheat crop. They leave the soil in good tilth. The China bean, with a red eye, is to be preferred. They ripen early, and are very productive. I cultivated beans the last year, in three different ways, viz. in hills, in drills, and sowed broadcast. I need not describe the first, which is a well-known process. I had an acre in drills, which was the best crop I ever saw. My management was this:—On the acre of light ground, where the clover had been frozen out the preceding winter, I spread eight loads of long manure, and immediately ploughed and harrowed the ground. Drills or furrows were then made with a light plough, at the distance of two and a half feet, and the beans thrown along the furrows about the 25th of May, by the hand, at the rate of at least a bushel on the acre. I then gauged a double mould-board plough, which was passed once between the rows, and was followed by a light one-horse roller, which flattened the ridges. The crop was twice cleaned of weeds, by the hoe, but not earthed. The product was more than forty-eight bushels, by actual measurement. The beans brought me one dollar the bushel last fall. The third experiment was likewise upon a piece of ground, where the clover had been killed. It was ploughed about the first of June, the seed sown like peas, upon the first furrow, and harrowed in. The drought kept them back, but about 65 rods of ground, on which the experiment was made, gave a product of twelve and a half bushels. The crop was too ripe when it was harvested, and as it was cut with a scythe, I estimated that about two and a half bushels were left upon the ground. No labor was bestowed upon them from the time they were sown till they were harvested.—*J. B. in Ag. Tracts.*

Durable Whitewash.—I am enabled to certify the efficacy of marine salt in fixing whitewash made of lime. In the year 1795, when I was director of the naval artillery at the port of Toulon, I was commissioned to ascertain the utility of a method proposed by the master painter of that port, M. Maquilan, for whitewashing the ships between decks, and likewise their holds, in a durable manner, by means of lime. Our report was in favor of this process, which consists in saturating water in which the lime is slaked with muriate of soda, (common salt.) The whitewash produced by it is very permanent, does not crack, nor come off upon one's hands or clothes. The experiment was made only on wood. It appears from M. St. Bernarde's account, that it succeeded equally well on walls.—*Annales des Arts et Manufactures.*

Canada Thistles.—I have practised mowing the thistles every month successively during the summer for three years. I have found this to be the most effectual method I have tried. Continual cutting will prevent the seeds from reaching maturity: and the same operation will in time destroy the plant from the root. The next season after I begun cutting them once a month, there was not more than half as many, they have so diminished that there is only now and then a scattering plant left, which by another season will be wholly exterminated. The spot which contained about one-fourth of an acre, now affords good pasture, which before was unproductive of any thing else but the detestable weed.—*Genesee Farmer.*

Young Men's Department.

Lecture on Self-Instruction, delivered before the Young Men's Association in Albany, by J. BUEL. *(Concluded.)*

Self-instruction does not consist alone in reading, even good books. The mind must be disciplined to analyze what is said, and to select and treasure up what is best adapted to its wants and its improvement. It must be taught to separate the wheat from the chaff. The particular business in which we are employed in life, ought first to engage our attention, as administering immediately to our wants. When our personal concerns are provided for, we have high duties to perform to our friends and our country. We may be greatly aided in these private concerns, and public duties, by the example and advice of others, capable of instructing, which are to be found in books. These furnish us with the experience of every age and country. Nor are the physical powers to be overlooked, in our efforts to improve the mind. The body must be trained to temperance and exercise, if the mind, its consort, would attain to distinction and usefulness.—The mental powers can only be kept in a healthy tone, with the consent and co-operation of the body. Hence men who have displayed the greatest efforts of mind, have in every age courted exercise, in order to impart a healthful vigor to the body. I do not mean to quarrel with any one's habits, by the remark, that most of the men who have distinguished themselves by successful literary and philosophical research, have chosen the dawn of morning as the favorite time for study and contemplation. It is not a little singular, that most, and I believe all, of the brute creation, except beasts of prey, which subsist on the substance of others, obeying the power of instinct, retire to rest and repose with the sun, and rise with it to renew their daily employments; while man, endowed with reason, perverts the seeming designs of Providence, and ignobly wastes, in slumber, the choicest hours, which wise men have consecrated to study or to business.

Self-instruction is a means of improvement that lies within the reach of every individual in this favored nation. In this respect we enjoy high privileges, and sustain high responsibilities. In most of the Asiatic countries, the influence of *caste* has a paralysing effect upon the development of genius and culture of intellect. Every son is born to the business of his father. He cannot rise above it. The mass of population are virtually serfs to the privileged classes. Nor is the condition of the people of Europe much superior. The advantages of education, and the opportunities of self-instruction, to the laboring classes, are comparatively limited. They are not permitted to look up to the honors and distinctions of society. A restricted education best fits them for the menial condition which they occupy in the social scale. And even in Great Britain, whose inhabitants justly boast of more learning and more freedom than any other portion of the old world, the maxim, "*Let every one who is below, or under me, stay there,*" has unlimited sway among all classes, and tends very much to repress the march of intellect in the middle and lower portions of society. With us, the case is altogether different. The honors and distinctions of life are open to the competition of all. Wealth confers no civil distinctions; and if it did, such is its tendency to dissipate itself, under the peculiar structure of our government, and the free scope which it imparts to individual enterprise, that there is little danger of its becoming an heriditary evil—for it sel-

dom descends further than the third generation. The changes which take place in property here, more than in any other country, operate as a stimulus, and add very much to the intrinsic value, of self-instruction. With us, moreover, the acquisition of knowledge becomes a duty. Where all share alike in the privileges and responsibilities of freemen, we ought all to strive to bring the same, or at least competent talents, to aid us in the performance of common duties. If some of the minor classes of our population possess an undue influence in our civil affairs, a fact which is too manifest, they have acquired it by the power which knowledge has conferred upon them; and the best way to remedy the evil, is to impart more knowledge, which is power, to the major classes. The preservation of our freedom, and the perpetuity of our union, emphatically depend upon the general diffusion of knowledge, and a fair participation, of all classes, sects and professions, according to individual merit, in the honors and distinctions of the social compact. We should all feel proud of our privileges, but feel prouder that we merit them, by an intelligent and faithful performance of our civil duties.

In regard to this audience, and this community, the appeal is almost mandatory. There is not, to my knowledge, a place in the world, where the opportunities of self-instruction in useful knowledge, to the entire population, are more numerous and advantageous than they are with us, or the chances of profiting by it more flattering. Our public schools are of the highest order.—Our libraries are respectable, and accessible to persons of the most humble means. Our Institute proffers to the aspirants to literary and scientific fame, important facilities for the gratification of their laudable ambition. Public lectures are frequent, and embrace all or most of the useful sciences. And this association of young men, whom I now have the honor to address, is perhaps nowhere surpassed in its numbers, respectability and means of information. It realizes the best wishes, and promises to accomplish the best hopes, of the philanthropist and patriot. Those who have been instrumental in rearing it, and who have contributed to its usefulness and permanancy, deserve the highest praise, and will at least be richly rewarded in the consciousness, that they have contributed to a great public good. With all these means of self-instruction, and the strong motives which prompt to their use, our young men will be highly culpable, if they do not distinguish themselves in intellectual improvement. Much has been been given, and much will be required.

If, then, as I have endeavored to show, self-instruction affords a prominent means of promoting individual and public happiness—and if these means are virtually within the reach of all;—if fortune is precarious, and friends are not to be depended on—how strong is the monition which these facts convey to those who are coming on the stage of action, to enter with spirit, upon the business of self-improvement,—to become the architects and conservators of their own fame;—and, disregarding the adventitious circumstances of birth and fortune, or making these subsidiary to higher objects, to seek those substantial acquirements, which, under the favor of Providence, cannot fail to secure the great blessings of life. Every young man should resolve at least, to become respectable in his business or calling—*by his personal efforts.* Not that he is always to reject the proffered aid of others, but as this aid is at best precarious, and may disappoint his hopes, that he should be able, under every emergency, to sustain himself by the resources of his mind, and the energies of his body.—He should assume a high standard for his honest hopes and expectations, and perseveringly strive, by all honorable means, to reach the goal of his ambition. Without this preliminary resolution, his energies are liable to be relaxed, or wasted upon trivial objects. It is a characteristic of the Yankees to *try* to do what they see others perform; and what they try to do, they generally succeed in doing. This Yankee notion is worthy of imitation, in whatever is commendable. Industry, and some degree of self-denial, must be employed in the outset; yet habit will not only render these less and less irksome, but will soon convert them into pleasures; while the rewards they bring will become stimulants to new exertions. Our habits are our companions: our attachments to them are apt to become strong, be they good or bad: and hence the great importance of selecting and adopting in early life, those only of which we shall not be ashamed in maturer years. Knowledge is like money at interest: the more we have, the greater the income it yields us.

Permit me, in closing these brief remarks, which have been ripened into convictions by the force of half a century's experience and observation—to repeat to the young gentlemen of this association, that their future fame and fortune are in a great measure under their own control. Past ages tender to you the benefits of their experience, and the counsels of their wisdom; and the present is everywhere replete with admonition and instruction.—Nurture the pride and independence which becomes you as freemen; and, while you claim the free exercise of your own, permit not yourselves to trespass upon the rights of others. There is no principle in our government, and there should be none recognized in our practice, which gives any other precedence than that which is due to merit. All share in the burthens, and all should alike participate, in proportion to their qualifications and virtues, in the distinctions and honors of society. Without this, our boasted equality is but a mockery—a bitter taunt. Decide upon the business which you intend to follow in life; make it the object of your special attention; determine to become master of it, and to excel in it if possible; and cultivate, with assiduity, in the hours which can be spared from that business, the faculties of the mind, which are ever the source of the purest and most exalted of human enjoyments. Then may you say, in the spirit of the poet,

"Though 'tis not in mortals to command success,
We'll do all we can—*deserve it.*"

THE CULTIVATOR—JUNE, 1835.

TO IMPROVE THE SOIL AND THE MIND.

THE TURNIP CULTURE,

Is unquestionably rapidly increasing among us. There will probably be quadruple the quantity grown this year, in the northern and western parts of the state, that was ever before produced in a season. We entertain this opinion from the unusual quantity of seed which has been sold at the seed shops. This augurs well: for we are satisfied from fifteen years' experience, that there are few crops that make more than this for the interest of the farmer. As but few persons among us have as yet had experience in the culture of this root, we subjoin some brief directions, founded upon our personal experience, in particular reference to the ruta baga crop.

The soil for turnips should be such as will grow good Indian corn. It should be rich and dry, and, with these qualifications, the more that sand preponderates the better. Clay is the worst, and wet soils do not answer much better.

Preparation.—Our general practice has been to manure well a piece of pasture, or a clover lay from which the hay has been just cut, the last of June, plough it handsomely and harrow it well. A clover lay is preferable, as old sod does not rot, especially in a dry season, as was the case last year, in time for the wants of the crop. It is the practice of many to lay the ground in ridges of two and a half or three feet, and to cover the manure in these with a plough. This plan cannot be readily adopted upon a sward, but upon grounds under previous tillage, and to correct a wet soil, or economise manure, it is often the preferable mode.

Sowing, &c.—The seed may be sown broad-cast or in drills. The latter is far the best mode, and the drill-barrow is an important aid in the process. The sooner the operations of manuring, ploughing, harrowing and sowing succeed each other the better, as seeds germinate soonest in fresh ploughed ground. If the drill-barrow is employed, a trace chain may be passed round the coulter, and the ends suffered to drag after it, which will cover the seeds sufficiently. Sometimes a small roller is attached to the barrow, to press the earth upon the seeds. We allow a pound of seed to the acre, though half this quantity, well distributed, is enough. The seed should be sown from the 20th June to the 5th July. If sown earlier, the turnip is apt to become hollow before harvesting, the water gets in and induces rot. We have never succeeded well in transplanting.

Culture.—We use a cultivator, that may be graduated to the space between the rows, drawn by a horse, as soon as the plants can be well distinguished. This is repeated in a few days, twice in a space, and the implement carried so close to the drills, as to leave only strips of from two to six inches, which are then thoroughly cleaned with a skim-hoe, and the plants thinned to eight and ten inches distance. The cultivator soon follows for a third

time, and if necessary, the skim-hoe, when the crop is generally left till harvest; the great aim is to extirpate the weeds, to do this while they are small, and to pulverize the soil.

Harvesting is postponed as long as the season will permit. The roots are then pulled up, and laid on the ground, the tops of two rows towards each other. The pullers are followed by a man or boy with a bill-hook, who, with a light blow, cuts the tops as fast as three or four can pull. Three men will in this way harvest, of a good crop, 300 bushels in a day. Another, and we think a better mode, is, for the puller, with a bill-hook or heavy knife, in his right hand, to grasp and draw the turnip with his left, to strike off the tap-root as soon as it is raised a little above the ground, and then with another quick stroke at the crown, sever the top from the root. This is done with great expedition, by an expert hand. The tap-root is acrid, and loaded with earth, and not worth preserving. The tops are gathered into heaps and taken to the yard in carts, daily, for the stock, until they are consumed. An acre will give from five to ten loads of tops. The roots are buried in the field, if dry—the pits, two or two and a half feet broad, covered with straw and earth, and as cold weather approaches, with manure, to prevent frost. N. B.—With a crow-bar, make one or more holes on the crown of the pit, into which a wisp of straw may be inserted, so as to let off the rarified air, and prevent the roots from heating. By neglecting this precaution, a neighbor, last winter, lost some hundreds of bushels! We have seldom lost one per cent in the pits.

Use.—The tops serve for autumn. As soon as the mild weather of spring will justify, we break through the frost, and take the contents of a pit to our barn, and cover the roots with straw or hay. From thence they are fed to our stock, being first chopped up with a *snick*, (Dutch meat-chopper,) or spade. They are excellent for sheep, especially for ewes that have young, and hogs and horses eat them freely. Steamed, they are used in the north of England for horses as a substitute for grain. We have fattened sheep and bullocks upon them with profit. They constitute particularly from February to June, an excellent culinary vegetable for the table. A bullock will thrive fast upon two bushels a day, and will consume hardly any hay, and requires no drink.

Produce and cost.—Our average crop has been 600 bushels per acre, though others have raised much heavier products. The cost, in manure and labor, when they are secured for winter, has been from two to three cents per bushel.

N. B.—Cattle or sheep, fattened upon this root, should be kept from eating them for eight or ten days before they are slaughtered; otherwise the meat will have an unpleasant flavor.

The Implements used in the Turnip culture, which are figured below, are useful for various other purposes on the farm or in the garden. They are, (*fig.* 1,)

Fig. 1.

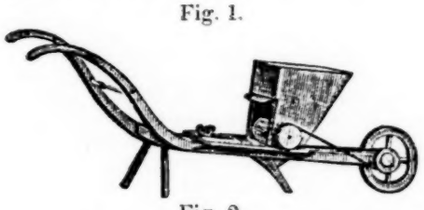


Fig. 2.

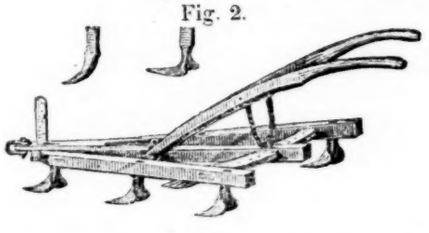


Fig. 3.

THE DRILL-BARROW, which is made in different forms, and is used in sowing various small seeds, as onions, radishes, lucern, beans, peas, &c. The machine is propelled like a wheel-barrow, and sows and covers the seed at the same operation. The cut represents the one we have in use. They are manufactured by Mr. Craig, of Galway, and sold at $8. A barrow somewhat differently modelled, has been invented in Lewis county, which has been highly commended for its value in planting corn. Price fifteen dollars.

THE CULTIVATOR, (*fig.* 2,) is the most useful implement we know of for dressing Indian corn, as well as ruta baga. By being passed frequently between the rows, the ground is kept free from weeds, and in a fine state of pulverization, while the manure and vegetable matter is left under cover, where it is most beneficial, and the roots of the plants preserved from injury. It should be passed twice at a dressing, and if the soil is stiff or grassy, it may be passed oftener, or repeated at short intervals. The teeth are of various forms, according to the purposes for which they are used. Some of these are figured in the cut. It is most convenient to have sets of different kinds, and the cost is trifling, that they may be shifted at pleasure. Our late excellent neighbor, Joseph Bullock, used effectually to extirpate the quack grass in his corn ground, by the frequent use of the cultivator, the teeth of which he had modelled for this purpose. They are manufactured by Mr. Craig, and, together with the drill-barrows spoken of, kept for sale by our enterprising friend, C. N. Bement, who is making some improvements on both these implements. The cultivator is often denominated horse-hoe, scuffler, scarifier, &c. It has sometimes a wheel attached forward, to regulate the depth.

THE TURNIP HOE, (*fig.* 3.) is a very simple, but useful implement, particularly in the garden, where it greatly faciliates the weeding process. We have them of various lengths, from four to ten inches. They should be of cast-steel, and may be made of an old file or rasp: the blade should be thin, and not more than one and a half or two inches broad. They may be drawn the arm's length without being raised, and there is little danger of cutting the plants among which they are used.

WHEAT WORM.

During the current month, this enemy may be expected to appear again in our wheat-fields; and it may be expected to extend its ravages south and west into Columbia and Oneida. It is extremely desirable to collect information in regard to the habits of this insect, and the means, if any should be discovered, of averting the evils which it is likely to inflict upon the land. We would therefore respectfully request men of science as well as farmers, to note down the observations they may make, and to transmit to us the result for publication, particularly such as may tend to solve the following queries:—

1. When does the maggot make its first appearance, and what is the term of its continuance in that state?

2. What are the transformations, if any, which the insect undergoes, and at what intervals do these transformations take place?

3. Has steeping the seed in lime water or brine, according to the recommendation of Bauer, been found to be efficacious in lessening or averting the evil?

4. Has the sowing of quick lime upon the crop, when in blossom, or subsequently, or other topical application, been found to be beneficial? And,

5. What per cent injury has the wheat crop sustained in consequence of these insects?

After writing the above, we saw and conversed with Mr. Edward Haswell, a very intelligent and observing farmer of Bethlehem. He says that early sown wheat, and that growing on dry ground, was least, and some of it very little affected by the grain worm last year; that the worm made its appearance in great numbers at once, and not by degrees; that he sought for them almost daily, and that the first day he saw them, he found six to ten on a single grain; and that he saw no fly from which they could probably have proceeded. Mr. Haswell thinks lime has no efficacy in destroying them. He sowed it many successive mornings, when the wheat was in blossom; he covered the heads of grain with it and immersed them in lime water, and still found the worm in the heads thus experimented upon, wholly unaffected by it. The lime, however, had been some time on hand, and had become, undoubtedly, mild or effete. Mr. H. tried spirits of turpentine with as little effect. Mr. Haswell's observations rather favor the opinions of Bauer, as published in the first volume of the Cultivator, that the insect is propagated, like smut, *through the circulation of the sap*. He detailed several cases where seed from an unaffected crop, sown by the side of seed from an affected crop, had remained uninjured, or nearly so, while the crop from affected seed was nearly destroyed. He has found the worm in abundance, this spring, in

the wheat of last year, when threshing it in his barn. From this it would seem that the worm is continually multiplying, as described by Bauer, or that it remains a long time as a maggot ere it changes to a chrysalis, and that, like some of the aphides, it produces several generations with once copulating.

SILK CULTURE.

To comply with the request of several corespondents, we insert, to-day, the directions, prepared by request of the State Agricultural Society, for sowing the seed, and rearing the plants of the White Mulberry. We cannot confidently recommend, until after further trial, in our northern climate, the culture on a large scale, of the morus multicaulis, though we think it probable that it affords a better material for silk than the common white variety. The French periodicals furnish another instance of failure to produce this species genuine from its own seed; while the Northampton papers are pertinacious in insisting that the seed will produce, and does produce, the like of its maternal parent. These contradictory opinions are easily reconciled, without imputing error to either side. The mulberry forms no exception to the sexual law which governs in the vegetable as well as in the animal kingdom, and which is made subservient to the interests of the gardener as well as breeder. Hybrid varieties of plants, the progeny of parents of different species, but of the same genus, are annually coming to our notice. The cabbage and turnip, when allowed to intermix their pollen, produce hybrids—so of the melon and squash. Now the Northampton seed came from India, where it is probable there was no other species of this genu growing in the neighborhood, and the seed would of course be pure. In France and Italy, other species of the mulberry are common and extensively cultivated, and the blossom of the morus multicaulis undoubtedly became fecundated with the pollen of these, and the progeny became hybrid.

We have no doubt the silk culture will ultimately succeed, and constitute an important branch of our national industry, if it is not paralyzed by the blighting influence of associated capitalists. There is no business better suited to the economy of the farm, and to people in moderate circumstances than this. It enables the otherwise unproductive inmates, females and children, to turn their labor to good account. But we are afraid that large establishments, with corporate powers, will tend rather to retard than to encourage this branch of rural labor, except in their immediate neighborhoods, where it can be made subservient to their cupidity. There will, however, be failures in this as in every other business, in which men embark with more zeal than knowledge. We remember the subject produced no little excitement some half a century ago, in Connecticut, when that state gave a bounty for planting mulberry trees. We were then familiar with the management of the silk-worm, and assisted oft in gathering leaves for their food. The excitement and zeal soon died away, but is now renewed with far better prospects of success. The least we can advise every person to do, who wishes to succeed in the culture of silk, is to subscribe, without delay, for one of the monthly papers which are expressly devoted to this subject. Address F. G. Comstock, editor of the *Silk Culturist*, Hartford, Con.—enclose a dollar bill, and you will receive one or two copies.

LEGISLATIVE AID TO AGRICULTURE.

The indifference of our legislature to the interests of agriculture, or rather their pertinacity in denying to those who seek to promote these interests, any facility which may enable them to give more efficiency to their labors, is a matter of surprise to some. The State Agricultural Society made two respectful requests: one, that the legislature would offer a liberal premium for the discovery of an effectual preventive of the injury this part of the state is now suffering from the grain worm,—which, if it led to the desired discovery, would in all human probability, have saved millions to the state,—and if no discovery had ensued, would not have cost the state a cent. The other request was, to grant the common corporate powers to an association of gentlemen, who might be desirous of embarking capital—not to obtain usurious interest, —but for the purpose of advancing the best interests of the state, by the establishment of a school on a liberal scale for instruction in practical agriculture, in the arts, and in those branches of useful knowledge which are calculated to improve and embellish society. Not a cent was asked from the public treasury, nor was it, to our knowledge, contemplated to ask such aid at any time hereafter. This petition had attached to it the names of some of the best and most distinguished citizens of our state. Both of these applications failed—and failed too, we believe, in consequence either of the illiberal prejudice, or of the profound wisdom, of a committee of three, or of a single individual, and the perfect indifference to the subject of other honorable senators. The first mentioned application was not treated with common courtesy, if, as we are informed, it was not deemed worthy of being reported upon. It was presented in the senate, and referred to the committee on agriculture. The latter was presented in the assembly, where a bill passed with but three dissenting voices. In the senate it went to the committee on agriculture, who reported it, at the heel of the session, with numerous amendments changing altogether its character, and rendering it, if it had passed, unsuited to the ends contemplated by the petitioners.

We can make great allowance for honest prejudice—we can allow for, though we cannot commend, fastidious precaution—and we can appreciate the force of political feelings, which are too apt to claim the paramount homage of men now-a-days; we can do all this, without being able to discover any substantial reasons, worthy the dignity of grave senators, or compatible with their high public duties, for the marked hostility of the senatorial committee, to the propositions of the State Society, or the passive acquiescence of the senate in that hostile feeling.

AGRICULTURAL BOOKS.

We have been requested, by a correspondent of the *Genesee Farmer*, to furnish a list of agricultural books, suitable for a farmer's library. This we do cheerfully, remarking by the way, that the number of *American* books is very limited: and that in selecting those of foreign origin, we must take much chaff with the wheat. The elementary principles of husbandry are pretty general in their application while the practical operations of different countries must necessarily be variant, not only on account of difference in climate and soil, but in productions for the market, price of labor, habits of the people, &c. No European system of practice is therefore exactly adapted to our wants, though it may embrace much that is highly beneficial.

Independent of the memoirs that have been published by the agricultural societies in Pennsylvania and Massachusetts, and by the Society of Arts and Board of Agriculture in New-York, the *American* works on agriculture, that we have been acquainted with, are, to name them in the order in which they appeared: 1. Dean's New England Farmer; 2. Boardley's Husbandry; 3. Arator, a series of agricultural essays, by John Taylor, of Virginia; 4. A Treatise on Agriculture, by Gen. Armstrong: 5. The Farmer's Assistant, by John Nicholson; 6. Lorrain's Husbandry; 7. Essay on Calcareous Manures, by E. Ruffin; and 8. The Complete Farmer, by T. G. Fessenden. These are all worthy a place in a Farmer's Library, as well as the memoirs first named. Of Nos. 1 and 7, new revised editions have lately been published at Boston and Richmond. Of the others, copies are scarce, and the memoirs, we believe, cannot be purchased. No. 4 is a work of merit, comprising a great mass of interesting matter, detailed with great conciseness and perspicuity. No. 6 was written by an excellent practical farmer, who blended a great deal of useful reading and nice observation with an extensive practice. The writer was a self-taught philosopher, who scrutinized narrowly into cause and effect, and we believe was a very successful farmer. The essay on calcareous manures, is an invaluable treasure to all who can avail themselves of lime and marl, as sources of fertility. No. 8 is principally a judicious compilation from the agricultural papers of our country. A new edition is now in the press. There are several American publications which treat of the orchard and the garden, which it is unnecessary to enumerate, as they may be found in all our seed shops.

Of foreign publications upon husbandry, we should recommend the following, in the order we name them:—Low's Elements of Practical Agriculture; Lawrence on Cattle; Davy's Agricultural Chemistry; Sinclair's Code of Agriculture; and, (last, *only* on account of its expense,) Loudon's Encyclopedia of Agriculture. The Farmers' Series, published by the British Society for diffusing useful knowledge, affords an excellent compendium of British husbandry, though but partially adapted to our country.

But neither foreign nor American books ought to supersede the

agricultural periodicals of the day. These abound in communications from our best farmers, and detail the improvements which are continually developing in rural labor. We venture to say, there is not a farmer in the Union, of common intelligence and enterprise, who is ambitious to improve his condition, and who takes an agricultural periodical, that is not more than remunerated for his subscription, by the useful information which he acquires from it. They are generally printed in a form to be easily preserved, and they ought to be preserved. We subjoin a list of such as are known to us, for the benefit of the readers of the Cultivator:—

Monthly.—Southern Agriculturist, at Charleston, S. C.; Farmers' Register, at Shell-Banks, Va.; New-York Farmer, N. York; Cultivator, Albany; Tennessee Farmer, Ten.; Fessenden's Practical Farmer, Boston; Rural Library, a monthly publication of 32 8vo. pages, New-York.

Weekly.—Genesee Farmer, at Rochester; New-York Farmer, at New-York; New-England Farmer, at Boston; Maine Farmer Winthrop, Me.; Yankee Farmer, Cornish, Me.; Ohio Farmer, Columbus, Ohio; Southern Planter, Columbus, Georgia.

Devoted to Horticulture particularly.—The American Gardeners' Magazine, by Hovey & Co., and Horticultural Register, by G. E. Barret, both monthly 8vos., published at Boston.

Devoted to Silk Culture.—The Silk Culturist, at Hartford, Con.

To Orchards and the Vine.—Coxe on fruit trees; Thatcher's Orchardist; Prince's Pomological Manual; Kenrick's New-American Orchardist, and Prince, Adlum, Lombat and Rafinesque on the Vine.

The Quarterly Journal of Agriculture and New-York Farmer are from the same press, as are the New-England Farmer and Practical Farmer. The Rural Library is a republication of American works on husbandry and gardening.

We can neither give the price of all the books we have enumerated, nor refer to the bookstores at which they can be had. The periodicals may be obtained, by addressing the editors of the respective works.

Directions for sowing the seeds and rearing the plants of the White Mulberry Tree, prepared in pursuance of a resolution of the New-York Agricultural Society.

1. Prepare a good piece of garden soil, by digging and pulverizing it; lay it out into beds of three or four feet broad, and rake it off smooth. Do this early in May. Sow from the 12th May to the 1st June.

2. With a hoe, stick, or other instrument, proceed to make shallow drills across the bed thus prepared, from twelve to eighteen inches apart, and scatter the seed in the drills as thick as you would onion or parsnip seed; then cover half an inch with fine mould, and press it moderately down with a hoe; or, when the first drill is sown and covered, place upon it a narrow strip of board, and stand upon this board to sow the second drill, upon which, when sown, place the board in like manner, and sow the third drill, and proceed thus until the whole is completed. The pressure of the earth upon the seeds is to bring it in close contact with them, that they may be kept moist, and germinate readily. If the weather be dry, or the soil very light, an occasional watering at evening will be beneficial.

3. The only further care required the first season, will be to keep the ground free from weeds, and the soil moderately loose.

4. Strong plants of one year's growth, may be transplanted in April into nursery rows; or, the whole may be left to grow a second summer in the seed bed; the ground, as before, being kept free from weeds and occasionally stirred.

5. After two summers' growth, all the strong and healthy plants should be placed in nursery rows, which may be done thus: the ground being prepared, as for a crop, draw a line and proceed to open a trench, of sufficient breadth and depth to admit the roots freely, leaving the side next the line straight and perpendicular. Having assorted the plants, and cut off the bruised and shortened the tap roots, a man proceeds to place them in the trench, in their proper position, the heel of the plant towards the line, and at the distance of a foot apart; while another man with a spade, or the planter with a gardener's trowel, throws in earth to hold them in their place. The trench is then to be filled, the plants set upright, and the earth trod about them. The other rows are planted in like manner, three feet apart—the ground to be kept clean during the season.

6. After standing two years in nursery, the plants will have acquired a sufficient size to plant out in the ground where they are to stand; and if intended to be grown in hedge, or as bushes, they may be taken earlier, even at two years old, from the seed bed. For hedges, plant the same as for nursery rows, at eighteen inches, the ground having been previously prepared by an ameliorating crop, as potatoes. The same precautions are necessary with mulberry as with other fruit trees, intended as standards, as to distance and planting. A broad and deep hole, partially filled with good surface mould, will always repay for extra labor. When intended to be cultivated as bushes, they may be planted thick, and left untrimmed, so as to occupy the entire ground. The mulberry is generally grown in the latter way in India and some parts of Italy. It facilitates the gathering of the leaves, and affords an earlier product.

The mulberry grows well on almost any soil, and particularly in one which is stony. Upon poor, dry soils, it affords the best material for silk. An ounce of seed will give some thousand plants, and require a bed four feet broad, and forty to fifty feet long. *Albany, March* 15, 1832. J. BUEL, *Cor. Sec'y.*

Gama Grass has been a topic of commendation in our journals for some years without our having participated in its praise; not because we did not think it an acquisition to farmers, but because we apprehended it would not do for *northern* farmers—that it would not withstand our winters. The seed is enveloped in a thick capsule, which it is difficult to separate from it, and which is ordinarily planted with it: it has been found extremely difficult to germinate, for which a high temperature, like that of June, is requisite, and it is yet in time for those who have the seed to sow it. Through the politeness of our esteemed friend, Dr. Beekman, we have received a package of the seed, some of which we have now growing in a hot-bed, and a small parcel yet remains in our office for distribution. Our readers shall be advised of the result of our experiment with it. In the mean time, we subjoin Dr. Beekman's directions for managing the seed and plants.

"*Gama Grass Seed*—Sow in drills, 18 inches apart, about a half pint tumbler full to forty feet in length; cover about two inches; in a month it will come up like oats; when about six inches high and two suckers appear, one on each side, then transplant, about three feet by two feet. The second year, in Georgia, the first cutting may be made in May, and once every month to the first of October, say six cuttings; each cutting the blades will be three feet or upwards; each forms a large bunch, and may be annually divided into from ten to forty plants. The cuttings will probably be reduced to four, northerly, in place of six. Good land is of course required for such vegetation.

"Copy of the directions. From your friend,

"J. P. BEEKMAN."

PRACTICAL HINTS TO CORN GROWERS.

William Clark, Jr. of Northampton, to whom the public are already indebted for some nicely conducted experiments in growing this crop, has published in the New-England Farmer, the result of a series of new experiments, to determine the most advantageous distance of planting, &c. We subjoin the result:—

"The following table will show the order in which the rows were planted, and perhaps will exhibit the method pursued and the result, better than can be done by description; and also afford opportunity to detect any error that may have been admitted in the estimates.

Number.	Distance.	Ground to each hill.	Hills per acre.	Hills in row.	Stalks per hill.	Produce of row.	Produce of hill.	Shelled corn per acre.
1	2 ft. 6 in.	6 ft. 3 in.	6970	80	3	47 lbs. 9 oz	6¾ dms.	54 b. 44 p.
2	do	do	do	80	4	49 9	12¼	56 67
3	do	do	do	80	5	52½ 10½		60 74
4	Intermediate or dividing row.							
5	2 ft. 9 in.	7 ft. 6¾ in.	5760	72	3	48½ 10	12½	51 56
6	do	do	do	72	4	53 11	12½	56 41
7	do	do	do	72	5	57 12	3½	58 48
8	Intermediate.							
9	3 feet.	9 feet.	4840	66	3	48 11	10½	46 70
10	do	do	do	66	4	54½ 13	3½	53 20
11	do	do	do	66	5	56 13	9¼	54 56
12	Intermediate.							
13	3 ft. 3 in.	10 ft. 6¾ in	4124	60	3	43 11	7½	39 31
14	do	do	do	60	4	48½ 12	15	44 34
15	do	do	do	60	5	55 14	10 2-3	50 30
16	Intermediate.							
17	3 ft. 6 in.	12 ft. 3 in.	3556	57	3	46 12	14½	35 18
18	do	do	do	57	4	55 15	7	45 56
19	do	do	do	57	5	56 15	11	46 43

"It will be seen in every case, that the hills of three stalks, produced less than those of four, and those of four less than those of five. In this view it may be considered as five experiments, all giving the same result, notwithstanding some of the hills occupied but about half the quantity of ground usually given them in our field culture. The average of five rows, one from each parcel, is as follows, viz:

3 stalks in a hill, 46 bushels, 14 lbs. per acre.
4 stalks in a hill, 52 bushels, 42 lbs. per acre.
5 stalks in a hill, 54 bushels, 20 lbs. per acre.

"The difference of average between three and five stalks is eight bushels six pounds per acre.

"It will be seen also, in every instance but one, or eleven times in twelve, diminishing the distance between the hills increased the product of the ground. The average of each parcel is as follows, viz:

3 feet 6 inches between hills gave 44 bushels 14 lbs. per acre.
3 feet 3 inches, do 44 bushels 57 lbs. per acre.
3 feet, do 51 bushels 49 lbs. per acre.
2 feet 9 inches, do 55 bushels 45 lbs. per acre.
2 feet 6 inches, do 57 bushels 36 lbs. per acre.

"The difference of product between the average of hills at two feet six inches, and that of hills at three feet six inches, is thirteen bushels twenty-two pounds per acre."

J. H. J. in the Maine Farmer, corroborates our repeated remarks and experience, *that unfermented manures are best for Indian corn*. Having manured a field part with fermented, and part with unfermented manure, the corn planted upon the former, had a surprising advantage, in the outset, over the latter. "The difference was so great, that you might tell where the fermented manure was put as far as you could see the field, as the stalks grew about twice as large. But, lo! *at harvest*, the ears were hardly worth gathering, whilst that part on which the green manure was put, was a fair crop of corn." We would ask the advocates for fermented manures, if this *fair crop of corn*, grown upon unfermented manure, did not derive all its superiority from the food which that manure gave off in the process of fermentation; and if so, whether the fermented manure had not lost much of its fertilizing properties by fermenting, *before it was applied to the crop?* The gases which unavoidably escape from fermenting manure, and which are lost to the farm if the manure ferments above ground, are as much the food of plants, as the black carbonaceous matter which remains after the dung has rotted; and the benign mechanical effects upon the soil of the former, are thrice as beneficial as those of the latter.

The Peach.—A correspondent at Bradford, near Newburyport, Mass. somewhat north of our latitude, says:—"I have been thus far very successful in rearing the peach tree, and in the amount and perfectness of the fruit, which I attribute, among other things to three causes. First, I set them upon rather dry and sandy land, but thoroughly manured from year to year. Secondly, I train them in the form of bushes rather than trees. Thirdly, take pains to have the crown of the tree well protected both winter and summer; and, if I may be permitted to add another, after having fixed upon the number of reasons, not suffering too much fruit to be reserved on the trees in any one year."

The Winter has been less hurtful to fruit trees in this neighborhood than was expected. Most of our peach trees are shooting forth their foliage, though their blossom buds have been destroyed here, as we believe they have generally been in the northern and northwestern states. Although, as we learn, the plum, and even the apple trees, have been seriously injured south of us, we hear no complaints of injury here. Hardy grape-vines, left upon the trellace, have been injured in their fruit buds, and in some instances they have been killed down to the ground. We owe our exemption from greater injury to the snow which formed a good covering to the ground at the time of the severe cold weather. Our practice is, and we recommend it as a wise precaution to others in our latitude, to take our Isabella and Catawba grapes from the trellace when we prune them in the fall, and either lay them close on the surface, or cover them slightly with earth. The magnolias, catalpa, paper mulberry, alianthus, Chinese arbor vitæ, evergreen thorn, and other exotics, have suffered more severely than ever before known. Plums will give but a light crop of fruit, but the apple and pear promise abudantly.

C. L. W., who dates at Canaan, asks, either jeeringly or in earnest, for "the best and most expeditious method of preparing saw-dust for manure?" We really doubt whether it can be *profitably* prepared by any artificial process. In reply to our correspondent's next query, whether breeding in and-in, or cross-breeding, is best in the rearing of domestic animals, we have no hesitation in saying, that the latter is decidedly preferable. We thank C. L. W. for his hint in regard to the ladies, and we will endeavor to profit by it.

Asparagus.—I do not like the asparagus which I meet with on the tables of city hotels. It is white, to be sure, but it is tough, ligneous and often bitter, and the most part of it not edible. This arises from an error in the cultivator, countenanced and encouraged by the buyer. It is owing to the asparagus bed being covered with a layer of earth or sand, that the grass may become blanched. The blanched part is what I dislike. If this dressing of earth is omitted, and the crowns suffered to remain near the surface, within the genial influence of the warm air, the growth is more rapid, and the grass all perfectly tender, edible and rich.

Query.—"Is it best to take out the manure in the spring, and put on our corn or potato crops, or to take it out in the fall for our wheat crops?"—*C. S. Candee, Glenville.*

Answer.—It is best to take the manure from the yards in the spring, for the corn and potato crops, to spread it equally, and plough it under while moist. The corn may be cut early in September, and wheat sown on the ground by the 25th of same month. The manure will still be nearly or quite as beneficial to the wheat as if it lies during the summer to rot in the yard. [See remarks on Mr. Kinzer's communication of, &c.]

Cisterns.—A correspondent at Bridgetown, N. J., (E. Holmes,) asks, "What kind of mortar should be used in constructing cisterns that will not leak?" We have had two built with brick and common lime mortar, the lime fresh burnt, and then well plastered on the inside with mortar made with water lime. They have remained tight hitherto. The most approved mode is to take for three part of lime, one part of terras, ochre, ground iron ore, or smithy slack (the dust of a blacksmith's shop,)—and blend them well with the sand in mortar.

The Italian Rye Grass is found, on trial, to do well in Ireland and Scotland. It has afforded two good cuttings the season it was sown, the growth having been 4 feet 8 inches, and 4 feet 6 inches—and cut the 31st of July and last of September. The herbage was healthy and green till December.

CORRESPONDENCE.

Spring Lawn, Pequea, Lan. Co. Pa. 1835.

Dear Sir—Your distinguished reputation, acquired by a well directed zeal and observation, as a scientific agriculturist, affords me not only an apology for thus addressing you, but a sufficient guarantee, that the information which I so much desire, will be readily communicated.

Having understood that you have improved a farm near Albany from a very low, to a very high state of cultivation, I shall feel myself much indebted to you for a description of the original component parts of the soil of said farm, i. e. clay, gravel, sand, &c.; whether upland or lowland, if any swampy land, how drained, &c. Did you apply fossil manures? if so, in what manner, and in what season of the year? If you applied stable manure principally, please name your seasons for applying the same, as also, the state of the manure; whether recent or fermented. I am informed you are in possession of a productive species of corn, which matures sufficiently early in the season, to put the corn land down to wheat in autumn after harvesting the corn crop—a very great desideratum in this vicinity. Will you be kind enough to transmit me some grains of said corn by mail without delay? If a few sound grains should arrive in the present planting season, the favor shall be thankfully acknowledged. From what I can learn by your writings, and that of your cotemporaries in the East, concerning, manures, I find Sir Humphrey Davy's opinion uniformly adopted, i. e. that the most valuable nutriment for plants, viz. carbon, ammonia, &c. waste and evaporate from manure heaps, when left over year to ferment. I have heretofore committed myself in the same opinion, but the impression that Davy's theory is merely ideal, and practical experience having with me, set inquiry on tiptoe, as it were, I investigated this interesting subject for a few years past

with the closest scrutiny and observation. I have deduced the following conclusions, which I cannot submit to a more competent judge than yourself.

I have applied stable manure repeatedly, in its recent state, generally ploughing it under, as it is troublesome when put on the surface, and requires a longer time to ferment. I have done what perhaps few have taken the pains to do; I have divided my manure heap in the spring with extreme precision—and after first surveying and dividing a field of very uniform soil throughout, I hauled the half of my manure heap in its recent state upon the half of said field, and ploughed it under in the spring; in September following, I put the remaining half of fermented manure on the remaining half of the field, and put the whole field down to wheat: I will just add that the part manured in the spring was sown with barley, and the other with oats; we consider oats the greater exhauster—the soil a heavy clay, upon which recent manure in all cases is most profitably applied. I will not omit the result, which was perceptibly in favor of that part of the field on which the fermented manure was applied, not only in the wheat crop, but with the grass since. I regret that my space will not allow me to narrate other experiments, equally conclusive, with fossil manures. According to the theory which I have deduced from experiments fairly tested, the vital spirit in stable manure, or all the vegetable nourishment it contains (excepting water) will not waste or evaporate. I compare a manure heap, in this point of view, to a vessel of ardent spirits exposed to the air; the quantity will diminish, but in the end there will be nothing lost but water. The water will evaporate from manure, but I contend the alkaline salt of the manure will not assume a gaseous or aeriform state. I cannot, as yet, be persuaded to dispose of fossil manures on any different principle. I say, after they are dissolved, they form a ley, which mingles with the soil, forming vegetable aliment, and adopting the theory, that the roots are the mouths of the plants, the sun, atmosphere and winds imparting in their turn, vigor, health and exercise to vegetation; it being obvious to the lax observer, that the winds exercise plants. I now, sir, come to the point—will you do the agriculturists in this quarter, (whose esteem you have deservedly gained) the enduring favor to publish this letter in the Albany Cultivator, with your answers to the queries herein contained? The public generally will greet your reply and remarks on a subject so important.

I am sir, with much esteem, yours, &c.

WM. PENN KINZER.

REMARKS ON THE ABOVE.

My farm lies on what is termed a pine barren, being an alluvial or diluvial formation, principally of silicious sand, once covered with a heavy growth of white and yellow pine, of late years intermixed with shrub oaks. The surface is somewhat undulating, with some swamps, and abounding in springs, mostly perennial. The soil contains but a small portion of calcareous earth, and but very little clay, though it is partially underlaid with clay and clay marl, that is, blue clay, containing 20 to 30 per cent of lime. The products of this farm, when first brought under cultivation eighteen years ago, were certainly not very flattering; but by draining, manuring, and alternating my crops I think it is now as productive, in net profit, as the alluvial bottoms on the Hudson, or any where else. It is not a wheat soil, but is well adapted to Indian corn, barley, rye, turnips, clover and the other grasses. I have used no fossil manures but gypsum, and that principally on my corn, potato and clover crops. Of animal and vegetable manures, I have used many kinds unknown to and unprized by many of our farmers. Crushed bones, horn shavings from the comb-makers, fleshings, oil and hair from the furriers, and the piths of cattle's horns, after the outside has been taken off for combs, are among the animal substances which I have employed, always with success, and which my contiguity to the city has enabled me to procure in large quantities, and often at a nominal price. I began with some of these rather as a matter of experiment, and the result has induced me to continue to use them. I draw manure from the city in the winter, and this, with the contents of my yards, is always applied in the spring, in an unfermented, or partially fermented state *and always to a hoed crop*, as corn, potatoes and beans, *which mature their product after the manure in the soil has undergone fermentation there*. The manure which accumulates before mid-summer is appropriated to the ruta baga crop. To induce healthy vegetation, and to enable me to work my land early in the spring, and with facility, I have constructed a great length of under drains, and I am satisfied the expense bears but a small ratio to the benefits which have already resulted from them. By these means, cold cranberry marshes have been transformed into fine tillable and clover land. I have also used, as a fertilizing material, large quantities of swamp earth, either spread upon the uplands, or first made into a compost with recent stable manure.

As to the corn which I cultivate, the favorable opinion I have expressed of it remains unaltered. I usually plant it between the 15th and 20th May, and harvest it, that is, cut it up, in the first half of September. In 1828 it was cut the last week in August, and deposited in the cribs before the 10th Sept. I treat it as I would a good horse—*feed it well*. I have sent some grains to Mr. K. For my mode of culture, I beg leave to refer him to the first vol. of the Cultivator.

We highly commend Mr. Kinzer's experiments with manure. It is by repeated experiments, and close observation, that the farmer is best enabled to apply general principles to his particular practice: and it is in canvassing each others opinions with freedom and decorum, that we often detect and escape error, and elicit truth. Although we attach full credit to Mr. K's statement we cannot nevertheless subscribe to his conclusions, which are so contrary to the convictions forced upon us by reason and practice. Every particle of vegetable and animal manure is capable of being converted into a liquid or gaseous state. These particles (including water, or its elements, hydrogen and oxygen) have formed necessary constituents of plants, and they are all necessary in the organization and structure of other plants. If fermentation takes place in the farm yard, decomposition ensues, and a portion of these particles, suited and prepared for the wants of the growing plants, escape into the atmosphere, and are lost. Another portion commingle with the water of the dung heap, and in fact are converted into water, and are washed away by the rains. But if the fermentation takes place in the sod, both the gases and the liquids are imbibed by the soil, and afterwards absorbed by the mouths of plants.

But there was an error in Mr. K's experiment, which we apprehend has led him to draw unsound conclusions. It was in applying his recent manure to the wrong crop—a crop which matured its seeds when the manure was in its most active state of fermentation—a circumstance which was calculated to produce a luxuriant growth of straw, but a diminutive crop of grain. Had he applied the unfermented manure to his corn or potato crop, he may rest assured, that these would have experienced great benefit, and yielded an increased product, from the application. But as we read the text, Mr. K. is silent as to the product of the barley crop. And besides, barley may exhaust the soil of the specific food of wheat more than oats, although the latter, in the main, may be the more exhausting for other crops than wheat. To have enabled us to draw just conclusions, both pieces should have been sown with barley or both with oats. Mr. K. has chosen a bad illustration of his theory in regard to alkaline salts, in the vessel of ardent spirits. Spirits are more volatile than water, and when combined in the still, are driven off before it, by the application of heat, in the form of steam or gas. And if the salts of the dung heap do not evaporate, they are certainly liable to be dissolved, and carried off by the rains. The application of Mr. K's principle to fossil manures, is undoubtedly correct. These do not ferment, nor evaporate in the form of gas; but they dissolve and sink, and hence should be applied on the surface of the soil, or near it.

We hope Mr. K. will persist in his experiments, and we invite him to transmit to us the results.—*Conductor.*

THE CORN CROP.

SIR—I have long been of opinion that the farmers of this country were not aware of the loss they sustained, by reason of the careless manner in which Indian corn is usually cultivated;—or, rather, that they were not advised of the immense increase of crop they might receive, by a more careful cultivation of the most benecial grain we cultivate.

I last spring planted several hills of corn of different sorts, in my garden, with a view of ascertaining the relative productiveness of each kind. But the ground was not suitable, and the drought was so severe that I was disappointed in the result, so far, as actual productiveness was in question. But still I was resolved to use the best data in my power, to demonstrate the relative productiveness of each short, by dissecting several plants.

And here I would observe, that all plants that bear their blossoms and fruit on the extremities of the stalk or branches, have the germs of all their parts and capacities for fructification formed in them from the time they come up out of the ground, although the parts may be so minute as not be detected. And this is particularly the case with Indian corn. For so soon as the stalk comes fairly out of the ground, by a powerful microscope, we may discover, on dissecting the plant, its entire capacity to bear fruit. But I have not predicated my investigation on microscopic observations, but on the dissection of the manure plant, taken up with roots.

The first subject, was a stalk of what I call Natick corn, and is so called in some parts of New-England, where it was cultivated by the Indians, before the landing of the Pilgrims. This is an early blue and white or blue and yellow corn, and will grow on as poor soil as any other sort I have seen, as it is perfectly acclimated to this climate.

At the 1st and 2d joints, there were the germs of suckers. These, if the ground had been rich enough, would have produced blossoms to fructify the late ears, and would also have produced hermaphrodite ears with the blossoms.

At the third leaf or joint, there was the germ of an ear, on their tops. At the 4th, 5th and 6th joints, there were perfect ears; then followed five barren joints, with leaves between the fruit bearing joints and the male blossom on the top. This variety of corn has eleven leaves and joints on the main stalk; the 1st and 2d to

produce suckers to render later ears fruitful; the 3d, 4th, 5th and 6th bearing fruit, and the 7th, 8th, 9th, 10th and 11th are by nature intended to support and nourish the male blossom on the top. These ears were of eight rows, each row containing 37 grains; from which it will be seen, that this variety is capable of producing four perfect ears on each stalk, or twelve ears on each hill, which, if planted in rows three feet apart each way, would afford 4,840 hills to the acre, and when perfectly cultivated, would produce 120 bushels of corn to the acre. This crop might be reckoned on with much certainty, under good cultivation, from this variety being so well acclimated.

2d experiment—Was a stalk of the common sweet garden corn. This also had the germs of suckers and hermaphrodite ears on the two first joints. At the 3d and 4th joints, were the germs of ears. At the 5th joint, the germ of an ear on a long spike, which, grown to perfection, would have had 320 grains, and on each side of this were the germs of another ear. The 6th and 7th joints had perfect ears, the highest of which was the best; then followed four barren joints and leaves, supporting the male blossom. On each side of the ear, at the 6th joint, there were also the germs of ears.

From the above analysis, it will be seen that this stalk of corn had the germs of nine ears on the main stalk, which, allowing three stalks to the hill, if they could all be brought to perfection, would, give the enormous quantity of 270 bushels to the acre.

But this corn is undoubtedly deteriorated, by planting seed from inferior ears, as it is exclusively planted as a garden article, for boiling green; under which circumstance, the best and earliest ears are taken off for use, and the small that come last are planted.

Of this corn, I would observe, that I am persuaded, that if it was fully acclimated and carefully improved, by selecting the best ears for seed, might be made a great crop of corn. I have propagated several sorts of it, some earlier and some later; and although my land is unfit for experiments, I shall, the ensuing season, try them all.

3d experiment.—This was a single stalk of eight rowed yellow corn, probably like that which is usually planted in Dutchess county, that came up in the yard, and although the ground was rich, yet it was much exposed to the great drought of last summer, as it stood in sand, under the refraction from the house, and an high fence, and in the neighborhood of several trees. It however grew well in the early part of the season, until nearly the time of blossoming, when the effects of the drought became evident.

On dissecting this plant, in the fall, I found the first joint had sent out two strong suckers, each of which had the germs of two ears on the two lower joints, with hermaphrodite ears on the tops, and the germs of perfect ears at the 2d and 3d joints, with hermaphrodite ears on the tops. On the 4th, 5th, 6th and 7th joints, there were the germs of perfect ears, none of which came to perfection, except the 7th. Above this, were four barren leaves, for the support of the male blossom.

From all these facts, I conclude, that this stalk of corn was capable of producing ten good ears of corn, of 45 grains in the row, by which the hill of three stalks would have produced 10,800 grains of corn, and an acre equally prolific, would have produced 300 bushels. But this corn, like most of the corn planted by our farmers, was not probably fully acclimated.

I have several other sorts of corn, but as these are sufficient to prove that corn is not so cultivated as to develop its utmost capacity to reward the labor and care of the agriculturist, I shall not particularly decribe others.

Indian corn is a tropical plant; but a beneficent Providence has made it capable of being acclimated in every region between the forty-fifth degrees of latitude. But its stature diminishes as it recedes from the tropics.

To expect the greatest possible crop in any region, the seed must be taken from plants fully acclimated, for it will not bear transplanting more than 100 miles, either from the north or south, without prejudice to the crop. And I am well persuaded, that the longer it is planted on the same farm or vicinity, the better will be the crop; provided that due care is taken to select the best ears for seed. And that after long planting in this way, all the ears and grains will be alike, and the stalks will have the same number of joints, leaves and ears.

The farm on which Gen. Van Wyck now resides, in Dutchess county, formerly belonging to Major Hoffman, whose farming was only remarkable for producing the most beautiful crops of corn, for a long series of time, say more than forty years. He died before the astonishing improvements had taken place, from the use of plaster, that has in later years distinguished that county. And as there was nothing remarkable in the farming of Major Hoffman, except a superstitious attachment to his peculiar seed corn, which was a white, eight rowed variety; the secret of its excellence consisted entirely in his never changing his seed during a long life, by which his corn became all perfectly acclimated, as well as respects the stature of the stalk as the ears, which were all equal, and the grains alike; and the whole acccommodated to the soil and climate in which it was grown.

Much is said of the best means of raising crops of corn, but the story is a short one. The best preparation for corn, is a good sward, and clover is the best. On this, at least forty loads of barn manure should be spread, before ploughing, to the acre. It then should be turned up with a deep, fine furrow, and so harrowed as not to disturb the furrow. It should then be marked out with straight lines, so as to form rows three feet apart each way, and from five to seven grains of seed placed in each hill. When the corn is well up, plaster it, and run a furrow between each row, and after the plant has acquired three leaves, let a careful person go through, row by row, and pull out the superfluous stalks, extracting the most feeble; then go through it again with the plough, twice between each row, with the back of the plough to the plants, and at last, when the corn is about knee high, plough again, turning the furrow to the corn; and after the plough, in all these dressings, a person should follow with a hoe, to eradicate any weed, and right up any stalks that may be thrown down, but not to earth up the plants; that should never be done. At the last ploughing, at least a bushel of plaster should be sown broad cast over the whole.

I am not certain which will produce the greatest crop in ordinary field cultivation, where the rows are three feet apart, whether two or three stalks in the hill will produce the best crop—but am inclined to believe that three stalks is the best number to be left.

Some persons, without understanding the natural history of the plant, at the last dressing pull off the suckers, which is ruin to the crop, as they are absolutely necessary, not only to filling out the ends of most of the first ears, but to filling out of the late ears in in any degree.

The time in which the male blossom on the main stalk remains in vigor is not more than six days, when the season is good. But if the weather is very hot and dry, or is stormy, it is not so long. And this length is only enough to fructify the earliest ears, in which the female blossom comes out first from the germ of the lowest grains, and present themselves in circles at the ends of the corolla or husks, and as they come out, are impregnated, and thus they are every day and hour presenting new circles of female blossoms, until the whole are thus impregnated. But if the heat is so excessive as to kill the male blossom before the whole of the female blossom has come out of the corolla or husk, then, if there are no suckers to supply the deficiency of pollen, there will be a portion of the upper end of the ear that will be barren of grain. To supply this deficiency of pollen, Providence, in organizing the corn-plant, has ordered that the three lower joints should produce suckers that should come up in succession, to supply a continual source of the fructifying principle to the whole succession of ears that may come out for the space of at least three weeks, after that on the main stalk has been exhausted. And on this succession of male blossoms the greatness of the crop depends. And the land should be so rich as to force out at least two suckers on every stalk, or no very great crop should be expected. But if the land is so rich as to produce these, then, instead of having the usual crop of about 35 bushels to the acre, the careful farmer may, with confidence, expect from 80 to 120 bushels with very little extraordinary expense, and his land well prepared for other crops.

You will please to indulge me further to observe, on the culture of corn, that to manure poor land in the hill, is bad cultivation, although, it is true, that by this mode, the early growth of the corn is promoted; but the moment the roots of the plants extend beyond the manure, the growth of the crop is checked, at the most critical season, when the suckers and ears are setting, by which it often happens that the stalk still runs up, and the male blossom comes out and is spent before the female blossom appears at all.—

But if the shovel full of manure that had been put in each hill, had been incorporated with the soil, the early growth of the crop would not have been so rapid, but then the growth would have been equal in all parts of the plant, and a crop would have been received in proportion to the goodness of the soil, and preparation and attendance given to it. AGRICOLA.

REMARKS OF THE CONDUCTOR.

The preceding remarks appear to us to be just and valuable, with one or two exceptions; and we mention these principally that the farmer may settle the points of difference between us and our correspondent, by actual experiment. We object to the use of the plough at all in cultivating the corn crop, and would substitute the harrow and cultivator. Agricola dwells with just emphasis upon the value of the clover sod, and of *spreading* the manure, no doubt on account of the food they afford to the plants. By the free use of the plough, which he recommends, it seems to us, that the measure of fertility would be greatly reduced, by exposing the vegetable matter of the sod and manure to the wasting influence of the sun and winds, and the roots of the plants injuriously restricted in their natural range for food; for they must be cut by the plough, and confined to the narrow strip which that implement leaves undisturbed, at least till after the dressing operations are completed.—Our opinion is, that the sod and manure should be left covered with the earth, where the wants of the crop require food, and where the roots of the corn will certainly find it, if they are not curtailed by the plough. The objects of after culture are pulverization, to admit into the soil the genial influence of heat, air and moisture, and the destruction of weeds. These objects may be amply effected by the harrow and cultivator, without wasting the food destined for the crop, or bruizing and cutting the roots of the grain.

In regard to the use of gypsum, we think it benefits the corn crop, by affording to it a portion of its specific food, and that it enters into the organization of the plant in the same way that other food does, namely, through the spongeoles of the roots. If this opinion is correct, then the method practised and recommended by John Taylor and Judge Peters, of sowing it broad-cast, before the last ploughing for the crop, is preferable, (and it saves labor,) to plaistering twice on the hill. A few experiments, to test the relative advantage of the two modes, would tend to settle this question, and would be of public benefit.

CANADA THISTLES.

Mr. Editor—Coming into this town when young, and settling on a wild lot of land, I observed little patches of Canada thistles springing up here and there, on the land, as soon as cleared of the timber, and knowing their natural tendency to increase, and stand their ground where the soil is favorable, I concluded (with the ordinary manner of tillage,) that the time was not far distant, when this fine, fertile wheat section of country, would, by them, be spoiled for wheat. I therefore took to trying various experiments, to find out an easy and simple method of destroying this obnoxious weed, (such an one as the people would universally be induced to follow,) and have found by several years experience, that to begin with the beginning of the summer season, in the last quarter of the moon, and with the plough, or some other instrument, cut the root of each and every plant, below the surface of the ground, as much as three or four inches, or where so situated as to be most convenient, to take hold of them close to the surface, and pull them out by the roots, will answer. And follow this plan every four weeks, (or every last week of the moon,) until into September, will effectually destroy them; so that they will not grow any more on that ground until they are again seeded. To those farmers wishing to summer-fallow this summer, where there are Canada thistles, I would recommend to plough the ground between the 20th and the 27th of May, and follow the above directions, every four weeks, or every last week of the moon, until into September, cutting up all the ground each and every time where there is thistle roots, (for you will not kill those you do not cut off,) and then sow it. I would not recommend to plough too deep in wet weather, for fear the roots turned over might grow.

I think that they will not only find this formidable enemy destroyed, but will find their crop of grain on the thistle ground enough better to pay them for their extra trouble, from the ordinary manner of tillage.

I have here recommended five times ploughing, but I have destroyed them with four, when the last quarter of the moon happened in the first of June.

I think the above method will destroy any plant living. Set your boys to pulling up your milk weeds on the times above specified, one summer, and you will clear your ground of those obnoxious weeds, notwithstanding their natural tendency to stand their ground.

I think the regularity of the cuttings, together with the growth of the season and the influence of the moon, is what does the work. Many will say, the influence of the moon is nothing; but I think the attraction of that orb on the fluids of the earth, has great influence on the growth of vegetation.

Those agriculturists of our country possessing lands infested with obnoxious weeds, and willing to cause two blades of grass to grow where there now does but one, will, by trying the above experiment, confer a favor on a true, notwithstanding an illiterate, friend of his country. AARON TUFTS.

South Le Roy, Genesee County, N. Y. April 17, 1835.

REMARKS OF THE CONDUCTOR.

It is a settled principle in physiology, that leaves are as necessary to vegetables, as lungs are to animals; and that without the healthful exercise of these organs, both the vegetable and the animal will become diseased, and ultimately die. They are essential to fit the food as wholesome aliment.—Leaves are as necessary to the roots of plants as roots are to the leaves; roots make leaves, and leaves make roots; they are mutually dependent on each other; and like the Siamese twins, one cannot long exist without the other.—The repeated and complete defoliation of a plant, therefore, must soon become fatal to its roots. Hence it has been found, that although very tenacious of life. Canada thistles can be destroyed, and have been destroyed, by preventing the growth of their leaves, either by ploughing, hoeing, mowing, or smothering them, so that they have not time to elaborate and prepare food for their roots.

UNDER-DRAINS—WHEAT—CLOVER.

Sing-Sing, April 18, 1835.

Dear Sir—As you are writing considerable for the instruction of farmers, in the way of making drains and filling them up, I am induced to give you the way which the farmers of the low lands of Scotland practise, and which I have adopted, in filling drains with stones, and it is this:—I select such stones as are thin and flat, and set them on the bottom of the drain, on their thinnest edge, or on one corner, and close to the side thereof; then against the stones first set up, I set other stones, with their sharpest ends down; and against them others in like manner, until the bottom of the drain is covered with them, something in the way of the annexed representation, in which it will be perceived, that the water will have a free passage between the points of the stones, which are on the bottom of the drain. The advantages of this mode of filling a drain are simply these, (the sides of a drain being sloping, as I think they always ought to be:) the stones are put in, in such a manner that the pressure which comes on them is thrown to the sides of the drain, and thereby saves them from settling and choking up the passages for water, and consequently prolongs its duration, and it is soon done. Where flat stones cannot be had, any stones may be made use of, provided they are of a wedge-like shape. As the upright stones will not be all of a length, the first which are laid on them should be large, and if possible flat, and that will make another large opening for the free passage of water, if the bottom is insufficient, or gets filled up. I think the bottom of a drain should be narrow, and a little the lowest in the middle, in order to concentrate the force of the water into one direct channel, the better to keep it free and clear. For instance, a ditch three feet wide at top, and three feet deep, should not be more than one foot wide at bottom.

I have a piece of wheat which was sown about the middle of last September, on a dry soil, of which I should think nearly two-thirds is dead, with the roots fair in the ground, the cause of the death of which I could not account for, until I read Mr. Hickock's communication, read before the State Agricultural Society, which came in the April number of the Cultivator, the substance of which was, that the saccharine matter designed for the support of the plant is more likely to be destroyed when grain is sowed early, than when it is sowed late. I have another piece which was sown the 4th of October, on wet heavy land, which has survived the winter admirably well, it being difficult to find a spear that has died. I have yet another piece, which was sowed October 20th, of which I suppose the one-third part or one-half is dead. On all the above pieces, wheat was sown at the rate of two bushels per acre, so there is enough left yet.

Last spring I sowed my clover seed, on the same land, at two different times, about five pounds to the acre each time. The first time I sowed near the last of March; the second time the tenth of

April. Soon after I sowed the first time, we had a warm rain, and the seed sprouted on the top of the ground any where; soon after we had a severe frost, and I observed that the sprouts of all those seeds which were shot forth on the top of the ground, were killed, whilst those which shot into the ground, were not injured. I further noticed, that such seeds or plants as had burst the shell and unfolded the first two leaves, were killed, whilst those which were still covered with the shell of the seed survived. In fact nearly all the plants of the first sowing were killed, but of that which I sowed the tenth of April, a large proportion lived. I gathered up several seeds of the first sowing, which had sprouted, but still retained their shell, the sprouts whereof had been killed by the frost, and planted them, thinking they might sprout the second time, but not one of them did. It is urged in favor of early sowing, that if the seed is not sowed whilst the ground is freezing and thawing and full of cracks, that the seed will not get in the earth, so as to shoot its roots therein and live, but my opinion is, that if farmers were to sow their clover seed from the 8th to the 15th of April, and harrow and roll, or if the ground is heavy, merely roll it in, they would secure to themselves that great disideratum, a good crop of clover. I further think that a great many of the seeds which fall into the cracks, sink too low down ever to reach the top, and that would suggest the propriety of rolling the ground to press in the seeds that do not fall in the cracks, and thus perhaps secure the life of almost the only plants that can eventually come to perfection. If the ground is harrowed and rolled, I think the seed should be sowed after the harrow, that the cracks may first be filled up; if a plant, after it shows its first leaves, gets covered up, (as I think a great part of those which germinate in the crevices do,) it is done forever.

I want you, if you please, to inform me, through the Cultivator, why the skin of young pigs cracks open, if they eat green clover, and whether you know of any preventive; and also whether it will cause their skin to crack if it is mown and given them in a wilted state.

If you think any of the above is worth publishing, you are at liberty to do it. With respect, I am your friend,

J. BUEL. JESSE RYDER.

REMARK.—We confess ourselves unable to answer, satisfactorily, the queries in relation to pigs.—*Cond.*

MR. BUEL—I have read with great interest, the back numbers of the Cultivator, but particularly those communications and selections, found under the head of Young Men's Department. Issuing to the most secluded parts of the country, these papers convey important intelligence to a class of young men who have hitherto derived little benefit from the study and experience of others; but who, if I mistake not, will be found ready to appreciate, as soon as perceived, the facilities presented to them.

There are few, who do not at times seriously make the inquiry—what shall most conduce to their standing in society?—by what means can they become most useful to their country?—what pursuit shall secure to them the greatest amount of happiness? This feeling results from a laudable ambition implanted by nature for the best of purposes, and is called into action by contrasting the present condition with some nobler one which is worthy of aspiration. If cherished, it might be expanded into deeds and characters of the highest order. But how often is it stifled at its birth for the want of that fostering care which the situation of its possessor precludes; how much oftener is it improperly directed, and thereby becomes pernicious to the community and a source of individual misfortune.

The residents of our cities, and the wealthy of *other* professions in the country, for the most part, early make their children conversant with history and the biography of distinguished persons. Every effort to improve the mind to which such reading may incite them is encouraged by the assistance of books and competent instructors. But with the young farmer the case is quite different. He is seldom acquainted with more than the names and actions of such as are esteemed benefactors. Of the stations they once occupied, the impediments they have overcome, or the circumstances to which they are indebted for their elevation, he is generally ignorant. His knowledge thus circumscribed to the neighborhood wherein he resides, from such a contracted sphere must his plans of life be drawn. That some possess and exercise a degree of superiority over their fellows, is early perceived—and frequently he can attribute it to no other reason than a greater amount of property. To the accumulation of wealth then, as the primary object of his existence, are his energies directed: and to this erroneous conclusion we have seen happiness sacrificed, the ties of kindred severed, and the foundation of a character laid quite different from any one contemplated by the young man at first setting out.

Legislators and political writers have delighted to dwell on the importance of this class of citizens, in a national point of view.—They have ascribed to them the duty of maintaining and transmitting unimpaired to posterity the liberties which we so justly prize, and in all cases of public danger they are acknowledged to be the only certain resource. It must be apparent that their services will be increased or diminished in the ratio that knowledge and virtue are diffused, and as intelligence advances or recedes will the duration of our form of government be determined. Many of our most eminent statesmen who, self-instructed, rose to the stations they adorned, have striven to make this impression popular. It is the subject of every appeal to our patrotism, and every address to our youth inculcates it. At this time there is avowedly no denial of the necessity for increasing the means of general instruction; but this opinion, though so unanimous, is feebly seconded by practical application. It would seem that the persuasion of its necessity is rather acquiesced in than felt, and while opposition is unpopular, few look upon it as their particular interest to support further.

Many farmers entertain the idea that an acquaintance with books tends to render their sons less qualified for the discharge of their domestic duties; that it makes them discontented with their condition, and giving rise to a feeling of self-importance to which they were before strangers, they look upon labor as a sort of degradation. That besides producing grief and dissatisfaction in their families, it frequently induces a young man to quit his paternal home, to seek among strangers and amidst numberless temptations, a precarious subsistence by his wits—of which poverty and disgrace is the usual consequence. If such a termination could in truth be traced directly to the agency of knowledge, it were far better to remain ignorant of the contents of a book, and to banish one as the bane of domestic happiness; but while the influence of such an example goes to the prejudice of learning, it may more properly be ascribed to other causes. Farmers in general, are apt to regard study as totally unnecessary to the success of their operations, and any inclination for it is considered as an indication of uselessness for their profession. They are allowed little opportunity of making any application of their reading to their business, because any innovation on established practices are received with incredulity. The reputation of idleness, of all others the most to be dreaded in the country, is to a young man so disposed, soon attached, and he is regarded as a person who would gladly avail himself of any pretext to avoid honest labor. Influential men make it a matter of congratulation that their sons are *not lazy enough for scholars.* While, then, such is the feeling on this subject, while knowledge and agriculture are deemed incompatible, and a pursuit of the one is held an abandonment of the other, is it to be wondered that many are driven from a field they were intended by nature to adorn, to swell the ranks, already too full, of other professions.

Though this is a great cause of detriment, it is not the only one. A principal evil lies in the inducement which is commonly held out to incite to mental exertion. "Knowledge is power." It is recommended as the means of exalting one above another—as a ladder by which to mount to office and distinction—the philosopher's stone which is to become a mine of wealth to its possessor. Sought under such circumstances, what a spirit of rivalship and acrimonious feeling is it the foundation of—to what purposes of unhallowed ambition will they strive to pervert it—how much disappointment and despair is it calculated to produce. In no such light should it be presented to the young farmer. His attention should not be solicited by any appeal to his passions, or the promise of making it accessary to personal aggrandizement. It should be exhibited as of itself repaying every effort made for its acquisition—as tending to minister to his comforts, and extend the sphere of his enjoyment, acquainting him with sources of pleasure hitherto unknown: not for the purpose of diverting his mind from his occupation, nor enticing him from a station where both his own happiness and the national prosperity require he should remain.

These impressions are given by one little qualified for the task of

writing on a subject of so much importance, and whose principal apology is in belonging to the class who are most immediately interested in such considerations. To this is joined the hope, that it may be the means of eliciting from some of your readers, with whose thoughts and feelings it is familiarly identified, such views and suggestions as may promote the end designed. When the means of intelligence can be commanded and desired by the producing classes, and agriculture and knowledge become synonymous, all will be realized that philanthropy and patriotism have contemplated. Traits of character, both of virtue and talent, will arise from the obscurest recesses of the country, from quarters little expected and now unavailable. Schemes of uncertain speculation will cease to attract so many of our most promising youth, and scientific agriculture regain the rank to which its bearing on the happiness of mankind entitles it. S. W. G.

Huntington, L. I. May 2d, 1835.

CATEPILLARS.

Mr. Buel—In the Cultivator for June last, I noticed an article on destroying the caterpiller, signed by Mr. Bridges, in which he speaks of killing the worms and destroying the eggs, by the same operation. If it would not be thought too trifling, I would correct an error which he has evidently fallen into, in supposing that he not only killed the worms, *but* destroyed the eggs. The fact is, that the eggs are never to be found in the nest or web that contains the worms. They are deposited in a sort of glutinous envelope, around some of the small or outer branches of the trees, in the summer or autumn of the preceding year, (as I suppose,) and I have but little doubt but that it is done in the latter part of autumn by the insect, when in the winged state, and not by a worm. Probably all of these eggs are hatched during the time the buds are expanding into leaves, and the great error is that the work of destruction is not commenced soon enough, by those who would preserve their trees from injury. This should be done as soon as the worms can be detected by means of their web. Yesterday, on a small tree of mine, by means of their web, I detected a company of these caterpillars, which, three days before, were (probably) in the egg. The house which contained the eggs, from which they had emerged, I found near the end of the same branch on which they had commenced their web. Let those who would preserve their trees despatch the worms on their first appearance.

Query.—Does the caterpiller undergo a transformation, by which it assumes wings? JOHN I. WILSON.

Port Byron, April 17, 1835.

Remark.—When the leaf-bud is bursting, a colony of caterpillers may be covered with three fingers, and easily destroyed; and even now, they will be found concentrated on a small spot in the morning, and may then readily be destroyed by a brush, or squab, affixed to a pole. The caterpiller *does* undergo a transformation.—*Cond.*

QUERIES.

Mr. Buel—Allow a subscriber to make a few brief inquiries.

Is it not an error (if one, venerable for its age, I confess,) to suppose that vegetable matter must be reduced to "food for plants," by the process of fermentation? Is it not true that by the lowest degree of heat at which fermentation can be produced the most valuable part of vegetable matter, consisting of the various gases, are driven off, and that there is as much difference between vegetables before and after the application of heat, as there is between bread "with the gin in it," and bread made of flour from which the alcohol has been distilled?

Are not the various vegetable substances from which manure is generally made, hay, straw, &c. &c. capable of being sufficiently decomposed for the purpose intended, by being intermixed with dung or rotten vegetable matter, and kept in a heap quite moist and sheltered from the sun—and by such process would the substances to be produced lose their properties as is above supposed in the case of fermentation?

Have we in this country any thing answering precisely to the *peat* of the old world?

ANSWERS.

1. Fermentation denotes "that change in the principles of organic bodies, which begins to take place spontaneously, *as soon as their vital functions have ceased*, and by them are at length reduced to their first principles." Vegetables as well as animals are organic bodies. Fermentation has been distinguished into three stages: the vinous or spirituous, the acid or acetous, and the putrid. The disengagement of gaseous matters from dead vegetables is therefore a sure indication that fermentation has commenced. It can only be prevented or retarded, by the absence of heat, moisture or the oxygen of the atmosphere. Thus seeds may be buried deep, beyond the reach of the atmosphere, or excluded from moisture, and the egg may be rendered impervious to atmospheric influence, for years, without losing their vitality, or their power to germinate or hatch; and until vitality has become extinct, neither the seed nor the egg will give off gas, or food for plants.—Ammonia is given off only in putrid, or the highest stage of fermentation, and is supposed to result from a union of the hydrogen and nitrogen of the decomposing matter. From these considerations we are induced to think that the old received opinion is a correct one, that vegetable matter must undergo fermentation before it can become the food of plants.

2. "Peat, or turf, is a congeries of vegetable matters, in which the remains of organization are more or less visible; consisting of trunks of trees, of leaves, fruits, stringy fibres, and the remains of aquatic mosses." Peat is found in various parts of our country, though the remains of aquatic mosses are less abundant, perhaps here than in Europe. The term we think is correctly applied when the vegetable matter is capable, by being cut and dried, of being converted into fuel, though the quality of American peat may differ somewhat from that which is found in northern Europe. Peat is found near Philadelphia; it has been long used at Poughkeepsie; and we have seen much of it undergoing the drying process in the state of Massachusetts. It is usually denominated *turf* with us, as it is in Ireland.

Tillage Husbandry.

There are few farmers, if any, who, in our opinion, manage their corn crop more judiciously than Mr. Chandler. The variety of corn he cultivates is the same we have cultivated and recommended for 12 or 14 years. His method of ploughing immediately before planting—of using the harrow, roller and cultivator—of not earthing the hills, and of steeping the seed in a solution of nitre—are also the methods we have pursued. Yet there are points in which we differ. Mr. C. sows turnip seeds at his last dressing.—We are perfectly satisfied of the utility of this practice, and intend to adopt it. He speaks of the plough in dressing corn; we do not use it. We think its use prejudicial, in breaking the roots, and in limiting their range for nutriment. He says nothing of harvesting the crop. We harvest ours early in September, which will give the turnip crop an opportunity of coming to something. He plants at 3½ feet by 18 inches—we at 2½ by 3. He leaves six or eight and we four stalks in a hill. But the material point of difference is in manuring; he *harrows* in his manure, or puts it in the hills; we *plough* it in; he uses compost, i. e. rotted dung mixed with earth or other matters—we rotted stable dung.

If dung is long, or unfermented, its first fertilizing properties *ascend*, in the form of gas, and it should hence be buried at the bottom of the furrow, where the roots ultimately seek for it. But if it is short manure, which has principally lost its volatile properties, its fertilizing properties will *sink*, and hence it is proper to apply it near the surface. As to dunging in the hill or spreading broadcast, although Mr. Chandler's experiments seem to favor the former mode, we are nevertheless inclined to think, both from theory and practice, that further experiments will induce him to adopt a contrary opinion, especially if he uses, as we do, unfermented manure for his corn crop. We are not pertinacious in our opinions, and are sensible of our imperfections.

From the New-England Farmer.

INDIAN CORN.

Sir—Having been often requested both by scientific and practical farmers, to publish my method of growing Indian corn, I take the liberty to offer to the public, through your useful Journal, the *New-England Farmer*, a few practical hints to young corn-growers. The reader will readily perceive, that I am more used to handling the plough and hoe than the pen, consequently he will excuse me, if I should now and then make a *baulk* with the latter. In this, I shall give the result of my experience, in raising corn on green sward, so called.

I plough as late, or as near to planting in the spring as possible, so as to turn under as much growth of green grass as I possibly can, which will immediately ferment, and help to decompose the old fog and sward, which makes the best of food for the latter growth of the corn. I usually plough one day, and plant the next, in the following manner: I commence on the further side or longest way of the field; after ploughing one day or so, I cart on to the furrows, and drop in heaps, at the rate of about twenty ox cart

loads of good compost manure to the acre: thirty-five bushels I call a load: dropped into six heaps the distance of the cart and oxen apart, each way, from centre to centre, will about do it. After dropping two rows of heaps, I spread the manure as even as possible, then harrow it over twice with a light harrow, then roll with a heavy roller, which I consider very important, as the harrow partially moves the manure with the soil, the roller levels the surface, and presses the manure into the soil, which prevents in a great measure its wasting, either by evaporation or the wind. I then furrow very shallow, calculating my rows three feet and a half from centre to centre; as sward land should always be worked lengthwise of the furrow, it is not necessary to furrow but one way, as all harrowing, ploughing, and hoeing the crop, should be done lengthwise, so as not to disturb the sod. If I have a plenty of manure, I then drop into the furrow in the hills, about eighteen inches a part, a small quantity of manure. In dropping the corn (a very nice operation) after levelling the manure with my foot, I strew from six to eight kernels lengthwise of the hill, in nearly a straight line, making the hill about ten inches long. The advantage of having the corn in a line is, you can pass with the plough or cultivator, (the latter I consider much the best) near the corn, without disturbing it, which I consider very important. At the first dressing, I pass twice in a row with the cultivator, taking care to shave close to the corn each time, then follow with the hoe, and chop around the corn, for the purpose of killing the weeds, and loosening the sod; taking care not to draw any earth up. At the second and third dressing, I pass with the cultivator or plough within about eight inches of the corn, and chop with the hoe as before, earthing up a very little, say about one inch each time, taking care to thin out the weakest plants, leaving from four to six in each hill. Immediately after the last dressing I sow about one pound of turnip seed to the acre. I will state some of the advantages of planting at the time of plouging. You make clean work, (as the old saying is among farmers) by beginning on the further side of the field, all the carting of manure and passing, will be on the grass, which is easier and better, than passing over ploughed land. Likewise at that season of the year, cattle are generally weaker than at any other time, therefore, ploughing one day, and planting the next, relieves them very much. Also by planting immediately after ploughing, the corn will get the start of the weeds, particularly, if it has been soaked twenty-four hours in a weak solution of nitre, and then mixed with ashes, so as to separate freely before planting.

I plant the early twelve rowed kind, which I name the Phinney corn, having first obtained the seed from E. Phinney, Esq. a first rate farmer in the town of Lexington, which I consider the best I ever planted, although I presume I have planted twenty different kinds, that I have received from different parts of the country. The ears are long, the kernels well set, and the cob better filled out than any other kind I ever saw. Take two ears of equal lengths, one a twelve, the other eight rowed, the twelve rowed ear will contain nearly a third more shelled corn than the eight. The stalks are very small and short, particularly the tops; consequently the ground is not so much shaded, which is a great advantage to the turnip crop.

The practice of spreading the manure on the sod, before ploughing, I do not approve of. I give my reasons: in 1828 or 9, I planted a field of about four acres, in the way and manner I have described, except a strip or band about two rods wide through the middle of the field, on which I spread the same kind and quantity of manure before ploughing, that I did on the other; and the after management was the same as the rest of the field. You could see the difference in the corn, in every stage of its growth. Come to harvesting, the ears were not so large nor so well filled out. The next spring I sowed the field down to grass without disturbing the sod; the seed took well, and I had a fine crop for several years after. For two or three years after, the grass was smaller on the strip where the manure was ploughed in, after which you could not perceive much difference in the crop. The experiment led me to observe more particularly the difference between spreading manure on or near the surface, or burying it deep. I am aware that it is said by some, and some very good practical farmers too, that you cannot bury animal manure too deep: that the gases will always rise to the surface, which I will admit they do in some measure; but the juices, the most important part, which way do they go? up or down? I say down: and a good ways down, in some soils. For instance, where a large heap of manure lies over winter in the field, after moving the same in the spring, if you take it up, and then manage the spot the same as other parts of the field, without ploughing or putting on any manure, you will have a large crop. On the other hand, if you plough the spot deep, after moving the heap of manure, the crop will be small, comparatively speaking, unless you manure the same as you do other parts of the field.

Now, Mr. Editor, if any of your subscribers will try my method of raising Indian corn, with a good kind of seed, on a tolerable good soil, and manage the whole process skilfully, in a good husbandlike manner, and the season should be as favorable as the last was, if he don't raise from 75 to 100 bushels of corn to the acre, and 200 bushels of turnips, besides pumpkins and beans if he plants them, I will tell him how to make compost and manage his field next season, so that he can cut his two tons of hay to the acre, for three or four years to come; which will more than pay him for the trouble of reading this and trying the experiment.

DANIEL CHANDLER.

B——, March 16th, 1835.

N. B. If you plant fallow ground, either spread the manure on the furrows, or harrow it in, or put the corn under the dung.

D. C.

Household Affairs.

To make Yankee Bread.—Take two measures of Indian and one of Rye meal, mix with milk or water, to the consistency of stiff hasty pudding, and add yeast—bake in iron pans or iron kettles four or five hours. Eat with fresh butter or other food, and if while warm the better. Yankee bread is very good or very bad, according to the manner in which it is made. We commend it to dyspeptics. The Indian meal should be either bolted or sifted.

Rhubarb Pies.—Gather a bundle of the leaf-stocks, *quantum sufficit*—cut off the leaf and peel the stock of the thin epidermis—cut in quarter inch pieces, and lay them into the crust—cover well with sugar, and add nutmeg, orange-peel and spice to taste. The flavor is equal, and many deem it preferable, to gooseberries. The pie-plant is perennial, herbaceous and very hardy. A dozen plants will afford a family a constant supply.

Spruce Beer.—Take three gallons of water, of blood warmth, three half pints of molasses, a table spoonful of essence of spruce, and the like quantity of ginger—mix well together with a gill of yeast; let stand over night, and bottle in the morning. It will be in good condition to drink in twenty-four hours. It is a palatable, wholesome beverage.

I was at old Fort-Hunter, on the Susquehannah, above Harrisburgh, in 1828. The highly respectable owner of this beautiful situation, Col. M'Allister, a gentleman of science and refined observation, treated my fellow-travellers and myself with great courtesy, and showed us some household conveniences worthy of imitation, and among others, his Milk-house, Smoke-house and Clothesline. I thought much of these, and have in part profited by my observation. That the readers of the Cultivator may profit also by these improvements, I will briefly detail them in part.

The Milk-house was built in the north-east side of a slope, near the well and not far from the mansion. It was composed of stout stone walls, and the roof, which rose 6 or 8 feet above the surface of the ground, appeared to be covered with earth or tile, and was deeply shrouded with the scarlet trumpet creeper, (*Bignonia radicans,*) then in splendid bloom. The interior of the house, principally under ground, was fitted up with cisterns, in which water stood nearly to the tops of the pans of milk, which were arranged in them. The house was entered by a flight of steps on the south, and there was a window on the north, which could be opened or darkened at pleasure, to give ventilation. For want of a natural spring, which many Pennsylvanians consider almost indispensable in a milk house, the water was conducted in a pipe from the well-pump, and after filling the cisterns to a certain height, passed off at the opposite side. The object was to obtain a cool temperature, in the heat of summer, which greatly facilitates the seperation of the cream from the milk, and this object was amply effected, with the labor of working occasionally at the well-pump.

The Smoke house was a wooden octagon building, perhaps 16

feet in diameter, perfectly tight, except the door-way. The peculiarities of this building were, it was set a foot or more above the ground, and was perfectly dry, and bacon, hams, &c. were kept hanging around its walls all summer, without becoming damp or mouldy, or being injured by flies; and, in the second place, no fire was admitted into the building, the smoke being conveyed into it through a tube from the outside, where it was generated in a stove.

The Clothes-line we saw had been six years in use, without sensible injury, though it had remained all this time in the open air. It had always been wound up, upon a small windlass, as soon as the clothes had been taken from it, where it was protected from the rain by a roof. Several posts, with notches near their tops, were placed in a range upon the grass plat, upon which the line could be drawn and fastened in two minutes, and from which it could be loosened and wound up in as short a time. It is but a small affair, but such small affairs make a large aggregate in ordinary life. "Take care of the cents, and the dollars will take care of themselves."

Miscellaneous.

PLEASURES AND PROFITS OE AGRICULTURE.

The importance of agriculture to all the substantial interests of mankind is so fully recognized, that it may be deemed unnecessary to expatiate on the attention to which it is entitled, or to insist on the superior advantages which those nations must ever enjoy by whom it is the most skilfully practised. Some writers, indeed, without regarding the intimate connexion that subsists between every branch of human industry, have assigned to agriculture a superiority over every other art; but while claiming for it, to the fullest extent, pre-eminence over every mechanical trade, in all those considerations which mostly influence the choice of a profession, it would be inconsistent with that liberal spirit which forms so distinguished a feature in the character of the times, not to admit, that it has no real title to precedence before the manufactures of the country; the object of both is to promote the general weal, and it is unjust to ascribe any peculiar degree of dignity to either. Custom, however, which often arbitrarily decides in opposition to reason, has decreed that individuals, even of elevated rank, may engage in the cultivation of the soil, without descending from their station—a distinction which has not alone tended to raise it in the public estimation, but has also procured for it the more solid advantage of inducing many persons to embark in it, whose education and intelligence have suggested the idea, and whose fortune has furnished the means of making experiments upon a scale which could only rarely have been attempted by the mere farmer; and which, although they have not been adopted to the extent that might be wished, have greatly contributed to the flourishing condition of the land, and the consequent prosperity of the country. Nationally, therefore, it is rather matter of congratulation, than of jealousy, that such a distinction has been made in favor of an art in the successful prosecution of which the welfare of the community is so deeply involved; and, individually, it is, indeed, fortunate for many, that, without any diminution of personal consequence, the independent may find an agreeable occupation, and the less opulent a source of additional income, in dedicating some portion of their leisure to the pursuits of agriculture.

Although other avocations may offer greater prizes in the lottery of life, yet, if we compare the advantages of rural industry with those of any other of the common occupations to which men devote themselves, we shall find that he who is engaged in agriculture has no reason to be dissatisfied with the lot which fortune has assigned him. Its superiority, in point of salubrity, over every sedentary employment, is too apparent to require illustration, and it affords more of those common enjoyments which constitute much of the elements of happiness, than any other state of equal mediocrity. The farmyard, the orchard, and the dairy, supply, almost without expense, abundant means for those gratifications usually termed 'the comforts of life,' besides many luxuries that are beyond the reach of people of humble fortune. Few persons, indeed, are insensible to the difference of mere animal existence, as enjoyed by the farmer who passes his days in the healthful labors of the field, and that of the mechanic or the shopkeeper, who wear away their lives at the loom or the counter; but it is not in that alone that the advantage consists.

Of all the feelings which we cherish, none is dearer to us than consciousness of independence; and this, no man who earns his bread by the favor of the public, can be said to enjoy in an equal degree with the farmer. Traders, as well as those termed professional men, are rivals, jealous of each other's success, and, let that be what it may, they still owe a deference to the world that is often galling to their spirit. But the farmer fears no competition. Individually, he has nothing to apprehend from the success of his neighbor; he solicits no preference; and he owes no thanks for the purchase of his wares. His business, though subject to more casualties than almost any other, is yet so divided among many risks, that he is rarely exposed to the hazard of total failure; the same weather which injures one crop, often improves another, and the very difficulty of a critical season opens a field for exertion by which he is frequently a gainer.* Possessing on his land all the means of life, he is under no corroding anxiety regarding his daily subsistence; he is removed from those collisions of interest and those struggles for precedence which rouse the worst passions of our kind; and his constant observation of the beneficent dispensations of nature for the care of all her creatures, can hardly fail to impress him with a deep sense of that religion of the heart, which consists in the conviction of, and reliance upon, the care of an all-ruling and all-bountiful Providence.

Nothing tends more to enlarge the mind, and to extend the sphere of our rational pleasures, than the contemplation of the economy of nature; and to those whom fortune has placed above considerations of pecuniary advantage, but who set a due value on intellectual enjoyment, the study of agriculture offers an inexhaustible fund of amusement, as well as instruction. The same objects, seen under different aspects, present an infinite variety of feature, and the most slender stock of appropriate knowledge, if aided by habits of observation and research, may be eminently useful in ascertaining facts hitherto unknown or unrecorded, and in thus illustrating a science which, however sedulously it has been explored, still opens a wide field for inquiry; while, even if not fortunate in the attainment of any material benefit, the mere occupation of the mind in tracing the origin and progress of any novel improvement, will be found productive of the purest gratification. It has been well observed by Sir Humphrey Davy, that the frequent failure of experiments, conducted after the most refined theoretic views, is far from proving the inutility of such trials; one happy result, which can generally improve the method of cultivation, is worth the labor of a whole life, and an unsuccessful experiment, well observed, must establish some truth, or tend to remove some prejudice.

The principles of gardening and of agriculture (confining the latter to tillage only, instead of the more extensive sense in which it is commonly understood) are nearly similar; both are directed to the cultivation of vegetable productions, and the only material distinction is, that the former embraces a large range, extending indeed, through the aid of artificial heat, to the whole vegetable creation, and demanding more minute and scientific arrangement, with closer attention—while the latter is conducted on a broader scale, and is necessarily limited to those plants which flourish in the open air.

Through these arts, many herbs that were for ages regarded as weeds, and others that were exotic, are now cultivated among the most valued, as well as the most common of our esculent vegetables; while several of those now grown in the fields were, at no very distant period, either little known, or considered as garden delicacies, and exclusive confined to the tables of the rich. There is still extant an ancient manual of cookery, entitled, '*The Forme of Cury*,' supposed to have been compiled about the year 1390, by the master cooks of King Richard II., in which, although elaborate directions are given for the preparation of '*cabaches*,' no mention is made of any other vegetables, except peas and beans, onions, leeks, and rapes; which latter were probably a species of turnip. Hume, indeed, tells us, that, 'it was not until the end of the reign of Henry VIII. that any sallads, turnips, or other edible roots, were produced in England; the little of these vegetable that was used being imported from Holland and Flanders, so that Queen

* "In twenty-four years' experience, upon a considerable scale, I always made the most money in difficult seasons."—*Pitt's Survey of Leicestershire*, page 53.

Catherine, when she wanted a sallad, was obliged to despatch a messenger thither on purpose.' Still later, we learn from an entry, dated in 1595, in the household book of the Cliffords, kept at Skipton Castle, in Yorkshire, that eleven shillings (a large sum in those days) were paid '*for vi cabishes and some caret-roots, bought at Hull.*'—a seaport at the distance of full eighty miles: from which we may presume that they were imported, and purchased for some very particular occasion. In the commencement of the seventeenth century, one of the commonest of our present esculents, the potato, was regarded as so great a rarity, that it was only served in small quantities, and at the price of two shillings the pound, at the Queen's table: it was for a long time treated as a fruit, baked in pies with spices and wine, or eaten with sugar: and nearly two hundred years elapsed, from its first introduction into this country, before it was cultivated as a field crop.

Since that time, through the progress of botanical science, and the efforts made for the improvement of horticulture, many productions of the south have been naturalized in this country, and the introduction of the hot-house has made us familiar with the rarest exotics. Still, various foreign vegetables remain strangers to our culture, though adapted to our climate, and even some, which are indigenous to our soil, have not yet been brought in to use, or are only slowly obtaining attention. It is not, indeed, to foreign nations alone that we are to look for new species of plants. Those which we already possess becomes so improved by cultivation, that new varieties of the same race are constantly produced, until, at length, by continued meloration, the parent stock is either lost, or neglected, and a new generation is created. Thus it has been supposed that not one of the numerous kinds and varieties of fruit, now found in our gardens and orchards, are what they were in their aboriginal state, and several appear to be absolutely new formations, the offspring of accident, or skill, rather than the spontaneous productions of nature. We are even ignorant of the native country, and existence in a wild state, of some of the most important of our plants; but we know that improved flowers and fruits are the necessary production of improved culture, and that the offspring, in a greater or less degree, inherits the character of its parent; the austere crab of our woods has been converted into the golden pippin, and the numerous varieties of the plumb can boast no other parent than our native sloe. Thus also, notwithstanding the attention bestowed by the ancients on the products of their gardens, and the probability that they were acquainted with a great proportion of the vegetables still in use, yet botanists find it difficult to reconcile the generic qualities of many plants, as they are described by the Greek and Roman authors, with the properties of those of the same species with which we are acquainted; we may, therefore, confidently infer, that an ample and unexplored field for future discovery lies before us, in which nature does not seem to have placed any limits to the success of our labors, if properly applied.

If the faculty of increasing the stores which nature has already provided for his support, raises man above the brute, that of adding new productions to those in existence raises him above his fellow, and few subjects of contemplation can be more gratifying, or more elevating, to a reflective mind, than this power, as it were, of creation, granted to his intelligence and industry. Nor is it necessary to its enjoyment that we should be either botanists or natural philosophers; or that we should devote more than occasional leisure to the pursuit. So boundless, indeed, is the scope which it affords for experiment, that it is in the power of any one, possessed of the smallest garden, and the least acquaintance with horticulture, so to improve the qualities of its products, as to add something to the common stock of botanical riches, while enjoying a very delightful recreation. While the farmer, who will take the pains to mark the progress of his crops, and to select from them the most productive ears of corn, and the finest roots and grasses, for seed, may, by perseverance in such a plan, not only acquire wealth for himself, but confer an inestimable benefit on his country.

But it is not to the patriotism of the farmer that we appeal. That is a motive called into operation only on great occasions; it governs none of the common actions of life, and has no influence over ordinary minds: neither is it necessary to our purpose. Self interest alone is a sufficient inducement to most men to exert themselves in their peculiar walk, and, if properly directed, it accomplishes the object of society as well as if they were swayed by higher principles of conduct. We, therefore, only mean to call attention to the fact, that, when pursued with skill and assiduity, husbandry offers one of the surest sources, not merely of independence, but of fortune: in proof of which assertion, numberless instances could be adduced of men now living in affluence, acquired solely by farming, as well as of others who have left large property to their heirs.

Among the latter, Bakewell stands foremost—not so much for the fortune which he realized, as for the important results of his experiments, as a breeder, both to the public, and to his numerous followers; inasmuch as the improvements which he effected in live-stock, or to which his example has led the way, have contributed largely to the increase of animal food, and opened a branch of farming as novel as it has proved lucrative. Efforts had, indeed, been made before his time, to improve the different breeds; but they were comparatively feeble and ill-judged, until his penetration discovered the defects of the former system. He observed, that the moderate-sized, compact, small-boned animals were generally in the best condition: he, therefore, endeavored to improve these desirable points, and to remove what he deemed blemishes: until, by slow degrees, but with great judgment and perseverance, he produced those varieties, of both cattle and sheep, which have since been distinctively termed, from his place of residence, the '*Dishley breeds.*' Such was his success, that, in one season, he received twelve hundred guineas for the hire of three rams, and two thousand for the use of seven; and, during several successive years, he never obtained less than three thousand for his entire letting. The spirit of emulation thus excited, and since so widely spread, gave rise to a singular division of labor among the sheep-breeders, who, until then, had usually been contented with the rams bred in their own flocks; but, from that period, it became a speculation to breed rams for the purpose of hiring them out. Some of these have been let so high as five hundred pound for the season: one, the property of Mr. Buckley, was hired, in 1811, at a thousand; and, as the system has been extended from the Leicester to all the other favorite stocks, many of the '*Tup-masters,*' as they are called, have profited largely by the innovation. Equally extraordinary prices have been given for cattle of superior quality; and it will be remembered, that a Durham bull—*Comet*—belonging to Mr. Charles Colling, of Ketton, was actually sold, by public auction, for a thousand guineas.

Of Bakewell's immediate disciples, the Messrs. Culley, of Northumberland, were the most distinguished. They were among the foremost promoters of all agricultural experiments: and their superior intelligence, unremitting industry, and judicious application of the capital they gradually acquired, enabled them—from small original means—to leave their respective families each in the enjoyment of landed property to the amount of nearly four thousand pounds per annum, besides having largely contributed to the welfare of the surrounding country.

To these examples must be added, that of one, less known perhaps, but not less worthy of imitation. The late Mr. Dawson, of Frogden, in Roxburgshire, was the son of a farmer in moderate circumstances. He was born in 1774; and after having assisted his father during some years, and having also obtained an insight into the English mode of farming, in Yorkshire and Essex, he took the lands of Frogden, and there commenced the plan of growing alternate crops of grain and grasses, or roots, and particularly of turnips, which he cultivated according to Tull's method. He was also the first to introduce the Norfolk mode of ploughing, with two horses abreast, into that part of the country; and, by perseverance in the prosecution of these improvements, he lived, not only materially to advance the husbandry of the neighboring district, but also to purchase a considerable estate, and to leave a numerous family in very great affluence. He is described by his biographer, as having been "exceedingly regular in his habits, and most correct and systematic in all his agricultural operations. His plans were the result of an enlightened and sober calculation, and were persisted in, spite of every difficulty and discouragement, till they were reduced to practice. Every one who knows the obstacles that are thrown in the way of all innovations, in agriculture, by the sneers and prejudice of obstinacy and ignorance, and not unfrequently by the evil offices of jealousy and malevolence, must be aware, that none but men of very strong minds, and of

unceasing activity, are able to surmount them: but such a man was Mr. Dawson." Yet this, however praiseworthy, is only the character by which every man of business should be distinguished: it displays none of that high talent which is the gift of nature, and may, deter, if not defy imitation; nor any of those great acquirements which are only to be attained by deep study and laborious research. Mr. Dawson's success was the simple result of the discernment with which he had adopted the improvements of others, combined with the application of good sense, observation, and persevering assiduity, to an object which requires no extraordinary ability; and it surely is in the power of every man of plain understanding, and equal determination in the same pursuit, to follow in his footsteps, if not to attain equal eminence. He must, however, divest himself of prejudice nor reject improvements merely because they are innovations on the practice of his grandfather. Not that a farmer should try every new experiment that is proposed, far less adopt any novel plan without due consideration. But if, after having weighed its advantages and disadvantages, with its applicability to the soil and means at his command, the former should appear to predominate—then let him afford it a fair trial; and let him recollect, that if a short cut to fortune sometimes lead a man astray, yet no one ever arrived at distinction by slavishly following the beaten track.

It is, indeed, deeply to be lamented, that such distinguished examples have not been more generally followed. Notwithstanding the acknowledged tride which agriculture has made in this country within the last half century, yet no science has been slower in its progress towards perfection; and even admitting numberless existing instances of intelligence and spirited management among farmers of the higher class, it is still an undeniable fact, that the great mass are men of a very opposite description. Brought up without sufficient education to enable them to comprehend the first principles of their art, acquiring it mechanically, as a mere trade, and either too dull or too indolent to seek information from books, they reject every proposed improvement as the visionary schemes of mere theorists, and even neglect them after their value has been proved by experience. Thus they invariably pursue the same routine they have learned in their youth, and adhere, with the obstinacy of satisfied ignorance, to obsolete customs, as detrimental to their own interest as to that of their landlords and of the public; and thus it is, that the average produce of many parts of the kingdom is below, that of other districts of not greater natural fertility, and that the husbandry of the South, though more favored by climate, is generally inferior to that of the North.

It is too true, that this jealousy of written information has been in a great measure justified by many crude publications of inexperienced persons, and that the sneers of practical men at what they contemptuously call "*Book farming*," are not wholly groundless. Much injury has been done to the cause of agriculture by sanguine speculations, which have only led to expense and disappointments; but all works on agriculture are not of that character; nor should it be forgotten, that theory is the parent of practical knowledge, and that the very systems which farmers themselves adopt, were originally founded upon those theories which they so much affect to despise. Neither can it be denied, that systems grounded upon theory alone, unsupported by experiment, are properly viewed, with distrust. for the most plausible reasoning upon the operations of nature, without accompanying proof deduced from facts, may lead to a wrong conclusion, and it is often difficult to separate that which is really useful from that which is merely visionary. The art of husbandry depends so much upon patient observation and the test of repeated trial, and is influenced by so many casualties beyond our control, that it would be rash to adopt any general rules as invariably applicable to the endless varieties of season, soil, and incidental circumstances. Prudence. therefore, dictates the necessity of caution; but ignorance is opposed to every change, from the mere want of judgment to discriminate between that which is purely speculative, and that which rests upon a more solid foundation.—*Introduction to British Husbandry.*

CULTURE OF THE CUCUMBER.

I will state a fact relative to the planting of cucumbers which came under my observation, and which is worthy of being known. I shall at least give a further trial myself of its reality; though I cannot conceive there is a doubt remaining on the subject. Last spring, a friend of mine and myself were planting cucumbers at the same time. I was planting mine, as is usual, in gardens, by mixing a small portion of stable manure with the earth, and raising the hill an inch or two above the surface of the ground. Observing it, he jocosely remarked, "Let me show you how to raise cucumbers!" Never having much luck in raising them, I cheerfully agreed to his proposition. He commenced by making holes in the earth, at the distance intended for the hills, that would hold about a peck—he then filled them with dry leached ashes, covering the ashes with a very small quantity of earth. The seeds were then planted on a level with the surface of the ground. I was willing to see the experiment tried, but had no expectation of any thing but a loss of seed, labor and soil. But imagine my astonishment, (notwithstanding a drier season never was known, and almost a universal failure of garden vegetables,) when I beheld vines remarkably thrifty, and as fine a crop of cucumbers as any one need wish to raise, and continued to bear for a very long time, unusually so in fact. I will not philosophize or moralize on this subject, but say to all, try it—and instead of throwing your ashes in a useless heap to stumble over, near your door, put them to a proper use and reap your "rich reward."—*Ohio Farmer.*

SCHOOL DISTRICT LIBRARIES.

An Act relating to Public Instruction.

§ 1. The taxable inhabitants of each school district in the state, shall have power when lawfully assembled at any district meeting, to lay a tax on the district, not exceeding twenty dollars for the first year, for the purchase of a district library; consisting of such books, as they shall in their district meetings direct; and such further sum as they may deem necessary for the purchase of a book case. The intention to propose such a tax shall be stated in the notice required to be given for such meeting.

§ 2. The taxable inhabitants of each school district shall also have power when so assembled in any subsequent year, to lay a tax not exceeding ten dollars in any one year for the purpose of making additions to the district library.

§ 3. The clerk of the district, or such other person as the taxable inhabitants may, at their annual meeting, designate and appoint, by a majority of votes, shall be the librarian of the district, and shall have the care and custody of the library, under such regulations as the inhabitants may adopt for his government.

§ 4. The taxes authorized by this act to be raised, shall be assessed and collected in the same manner as a tax for building a school-house.

Demand for Cocoons.—Judging from appearances, the demand for cocoons and reel'd silk, the coming season, will exceed the supply in a thousand fold The silk manufactories in Dedham Mansfield and this city, are depending principally upon the new crop for the raw material. The last year's crop is already exhausted, and we understand that scarcely a bale of foreign silk can be found in the commercial cities. Those, therefore, who raise a crop this season may depend on its being sought for by the manufacturers and at a very liberal price. We should not be surprised if they commanded $4 a bushel. Such persons therefore, as have foliage, will do well to make cocoons, if they are not prepared for reeling. —*Silk Culturist.*

Young Men's Department.

On the Pleasures and Enjoyments connected with the Pursuits of Science. (Continued from page 160, vol. 1.)

It is true, indeed, that the study of some of the subjects above mentioned, particularly the first principles of mathematics, may, in the outset, be attended with some difficulties, and to some minds may wear a dry and uninteresting aspect. But as the mind proceeds onward in its progress, and acquires clear conceptions of what at first appeared difficult or obscure—every difficulty it is enabled to surmount gives a new relish to the subject of investigation. and additional vigor to the intellect, to enable it to vanquish the difficulties which still remain,—till at length it feels a pleasure and an interest in the pursuit, which no difficulties, nor even the lapse of time, can ever effectually destroy. "Let any man," says Lord Brougham, "pass an evening in vacant idleness, or even in reading some silly tale, and compare the state of his mind when he goes to sleep or gets up next morning, with its state some other day when he has passed a few hours in going through the proofs, by facts and reasoning, of

some of the great doctrines in Natural Science, learning truths wholly new to him, and satisfying himself by careful examination of the grounds on which known truths rest, so as to be not only acquainted with the doctrines themselves, but able to show why he believes them, and to prove before others that they are true: he will find as great a difference as can exist in the same being,—the difference between looking back upon time unprofitably wasted, and the time spent in self-improvement; he will feel himself in the one case listless and dissatisfied, in the other comfortable and happy; in the one case, if he do not appear to himself humbled, at least he will not have earned any claim to his own respect; in the other case, he will enjoy a proud consciousness of having by his own exertions become a wiser, and therefore a more exalted creature."

The subjects to which I have now adverted may be considered, not merely in reference to the gratification they afford to the understanding, but likewise in reference to *the beneficial influence they would produce on the heart, and on social and domestic enjoyment.*

All the truths relative to the Creator's operations in the universe, when properly contemplated, are calculated to produce a powerful and interesting impression upon the affections. Is a person gratified at beholding *symmetry* and *beauty* as desplayed in the works of art,—what a high degree of delightful emotion must be felt in surveying the beautiful arrangements of Infinite Wisdom, in the variety of forms, the nice proportions, the exquisite delicacy of texture, and the diversified hues which adorn the vegetable kingdom,—in the colors of the morning and evening clouds of a summer sky, the plumage of birds, the admirable workmanship on the bodies of insects, the fine polish of sea-shells, the variegated wavings and colorings of jaspers, topazes and emeralds, and particularly in those specimens of Divine mechanism in insects, plants, and flowers, which the unassisted eye cannot discern, and which the microscope alone can unfold to view! Has he a taste for the *sublime?* How nobly is he gratified by an enlightened view of the nocturnal heavens, where suns unnumbered shine, and mighty worlds run their solemn rounds! Such contemplations have a natural tendency, in combination with Christian principles and motives, to *raise the affections* to that Almighty Being who is the uncreated source of all that is sublime and beautiful in creation,—to enkindle the fire of *devotion*,—to excite *adoration* of his infinite excellencies, and to produce *profound humility* in his presence. Such studies likewise tend to preserve the mind in calmness and *serenity* under the moral dispensations of Him whose wisdom is displayed in all his arrangements, and whose "tender mercies are over all his works,"—and to inspire it with *hope* and confidence in relation to the future scenes of eternity, from a consideration of his power, benevolence, and intelligence, as displayed throughout the universe, and of the inexhaustible sources of felicity he has it in his power to distribute among numerous orders of beings throughout an immortal existence. Contemplating the numerous displays of Divine munificence around us—the diversified orders of delighted existence that people the air, the waters, and the earth, the nice adaptation of their organs and faculties to their different situations and modes of life, the ample provision made for their wants and enjoyments, and the boundless dimensions of the Divine empire, where similar instances of beneficence are displayed —the heart is disposed to rest with confidence on Him who made it, convinced that his Almighty power qualifies him to make us happy by a variety of means of which we have no adequate conception, and that his faithfulness and benevolence dispose him to withhold no real good "from them that walk uprightly."

Such studies would likewise tend *to heighten the delights of social enjoyment.* There is nothing more grating to the man of intelligence than the foolish and trifling conversation which prevails in the various intercourses of social life, even among the middling and the higher circles of society, and in convivial associations. The ribaldry and obscenity, the folly and nonsense, and the laughter of fools which too frequently distinguish such associations, are a disgrace to our civilized condition, and to our moral and intellectual nature. Without supposing that it will ever be expedient to lay aside cheerfulness and rational mirth, the lively smile, or even the loud laugh, it is surely conceivable, that a more rational and improving turn might be given to general conversation than what is frequently exemplified in our social intercourses. And what can we suppose better calculated to accomplish this end than the occasional introduction of topics connected with science and general knowledge, when all, or the greater part, are qualified to take a share in the general conversation? It would tend to stimulate the mental faculties, to suggest useful hints, to diffuse useful information, to improve science and art, to excite the ignorant to increase in knowledge, to present interesting objects of contemplation, to enliven the spirits, and thus to afford a source of rational enjoyment. It would also have a tendency to prevent those shameful excesses, noisy tumults, and scenes of *intemperance* which so frequently terminate our festive entertainments. For want of qualifications for such conversation, cards, dice, childish questions and amusements, gossiping chit-chat, and tales of scandal are generally resorted to, in order to consume the hours allotted to social enjoyment. And how melancholy the reflection, that rational beings, capable of investigating the laws and phenomena of the universe, and of prosecuting the most exalted range of thought, and who are destined to exist in other worlds, throughout an endless duration—should be impelled to resort to such degrading expedients, to while away the social hours!

Domestic enjoyment might likewise be heightened and improved by the studies to which we have adverted. For want of qualifications for rational conversation, a spirit of listlessness and indifference frequently insinuates itself into the intercourses of families, and between married individuals, which sometimes degenerates into fretfulness and impatience, and even into jars, contentions, and violent altercations; in which case there can never exist any high degree of affection or domestic enjoyment. It is surely not unreasonable to suppose, that were the minds of persons in the married state possessed of a certain portion of knowledge, and endowed with a relish for rational investigations—not only would such disagreeable effects be prevented, but a variety of positive enjoyments would be introduced. Substantial knowledge, which leads to the proper exercise of the mental powers, has a tendency to meliorate the temper, and to prevent those ebullitions of passion, which are the results of vulgarity and ignorance. By invigorating the mind, it prevents it from sinking into peevishness and inanity. It affords subjects for interesting conversation, and augments affection by the reciprocal interchanges of sentiment and feeling, and the mutual communication of instruction and entertainment. And in cases where malignant passions are ready to burst forth, rational arguments will have a more powerful influence in arresting their progress, in cultivated minds, than in those individuals in whose constitution animal feeling predominates, and reason has lost its ascendency. As an enlightened mind is generally the seat of noble and liberal sentiments—in those cases where the parties belong to different religious sectaries, there is more probability of harmony and mutual forbearance being displayed, when persons take an enlarged view of the scenes of creation, and the revelation of the Creator, than can be expected in the case of those whose faculties are immersed in the mists of superstition and ignorance.

How delightful an enjoyment is it, after the bustle of business and the labors of the day are over,—when a married couple can sit down at each corner of the fire, and, with mutual relish and interest, read a volume of history or of popular philosophy, and talk of the moral government of God, the arrangements of his providence, and the wonders of the universe! Such interesting conversations and exercises beget a mutual esteem, enliven the affections, and produce a friendship lasting as our existence, and which no untoward incidents can ever effectually impair. A Christian pastor, in giving an account of the last illness of his beloved partner, in a late periodical work, when alluding to a book she had read along with him about two months before her disease, says, "I shall never forget the pleasure with which she studied the illustrations of the Divine perfections in that interesting book. Rising from the contemplation of the variety, beauty, immensity and order of the creation, she exulted in the assurance of having the Creator for her father, anticipated with great joy the vision of him in the next world, and calculated with unhesitating confidence on the sufficiency of his boundless nature to engage her most intense interest, and to render her unspeakably happy forever."

In short, the possession of a large store of intellectual wealth would fortify the soul in the prospect of every evil to which humanity is subjected, and would afford consolation and solace when fortune is diminished, and the greater portion of external comforts is withdrawn. Under the frowns of adversity, those worldly losses and calamities which drive unthinking men to desperation and despair would be borne with a becoming magnanimity; the mind having within itself the chief resources of its happiness, and becoming almost independent of the world around it. For to the individual whose happiness chiefly depends on intellectual pleasures, retirement from general society and the bustle of the world is often the state of his highest enjoyment.

Thus I have endeavored briefly to illustrate the enjoyments which a general diffusion of knowledge would produce—from a consideration of the limited conceptions of the untutored mind, contrasted with the ample and diversified range of view presented to the enlightened understanding—from the delightful tendency of scientific pursuits, in enabling us to trace, from a single principle, an immense variety of effects, and surprising and unexpected resemblances, where we least expected to find them—from the grand and sublime objects it presents before us—from the *variety* of novel and interesting scenes which the different departments of physical science unfold—from the exercise of tracing the steps by which scientific discoveries have been made—and from the influence of such studies on the affections and on social and domestic enjoyment.

For want of the knowledge to which I have alluded, it happens that few persons who have been engaged in commercial or agricultural pursuits feel much enjoyment, when, in the decline of life, they retire from the active labors in which they had been previously engaged. Retirement and respite from the cares of business afford them little gratification, and they feel a vacuity within which nothing around them or within the range of their conceptions can fill up. Being destitute of a taste for intellectual pursuits, and devoid of that *substratum* of thought which is the ground-work of mental activity and of rational contemplation, they enjoy nothing of that mental liberty and expansion of soul which the retreats of solitude afford to the contemplative mind; and, when not engaged in festive associations, are apt to sink into a species of listlessness and *ennui*.

They stalk about from one place to another without any definite object in view—look at every thing around with a kind of unconscious gaze—are glad to indulge in trifling talk and gossip with every one they meet—and, feeling how little enjoyment they derive from their own reflections, not unfrequently slide into habits of sensuality and intemperance.

From what we have stated on this topic, it evidently appears that the pursuits of science are fitted to yield a positive gratification to every rational mind. It presents to view processes, combinations, metamorphoses, motions, and objects of various descriptions calculated to arrest the attention and to astonish the mind, far more than all the romances and tales of wonder that were ever invented by the human imagination.—When the pleasure arising from such studies are rendered accessible to all, human happiness will be nearly on a level, and the different ranks of mankind will enjoy it nearly in an equal degree. As true enjoyment depends chiefly on the state of the mind, and the train of thought that passes through it, it follows, that when a man prosecutes a rational train of thought, and finds a pleasure in the contemplation of intellectual objects, his happiness is less dependent on mere sensitive enjoyments, and a smaller portion of external comforts will be productive of enjoyment than in the case of those whose chief pleasure consists in sensual gratifications. When intellectual pursuits, therefore, shall occupy the chief attention of mankind, we may indulge the hope, that those restless and insatiable desires which avarice and ambition never cease to create, will seldom torment the soul, and that a noble generosity of mind in relation to riches will distinguish persons of every rank, and be the means of producing enjoyment wherever its influence extends.—*Dick.*

WHY SHOULD'NT A FARMER KNOW A THING OR TWO?

Why should not a farmer know more than other folks? They certainly ought to, for they have in this country more to do than others. They have to make more use of the powers or laws of nature than other folks;—they have to use the elements for tools—they are indeed practical chemists, (whether they are aware of it or not,) for they have to make use of the various substances which Nature gave them—they have to combine, separate, modify and change both simples and compounds. Their farm is at one and the same time a laboratory and a workshop, and in proportion as they operate in such a way as to afford the several elements of which the substances are composed, and upon which they are operating, to disunite or combine, will be their success. They depend upon the vegetable world for subsistence—their labor is among and upon the plants of the earth—why should they not know the proper name and nature of every tree and herb and plant? They have to contend with insects and animals—why should they not know the habits, and the natures of these as well or better than any other class of people? They have to work upon the earth—they have to put it in a condition to bear a good crop—they have to change the state of it and adapt it to the various purposes and crops—why should they not know more and better respecting the ingredients of their soil—the various mineral or fossil substances which they may find either upon their own or others' farms? They have to "discern the face of the sky," and watch the changes of the atmosphere, and regulate their movements in accordance to the changes of the weather, temperature, &c. Why should they not know as much or more of the composition of the air or atmosphere, and the science of meteorology than any other people? They must use tools or implements of labor. They must take advantage of the principles of mechanics and the application of mathematics to practical life. Is there any good reason why they should not know as much or more than others, respecting the science of mechanics or natural philosophy? In this country they have to contribute largely to the support and formation of the government, and upon them depends the election of rulers and law-makers—why should they not understand the fundamental principles of national law—political science and political economy? They have to administer to the sickness of animals under their charge—heal wounds and restore health—why should they not perfectly understand comparative anatomy, at least, and also, physiology and the symptoms and treatment of diseases, as well as any others? Indeed so wide is the field of his labors, so numerous the objects with which he is connected, so various the operations which he has to perform, that we verily think that a farmer ought to be the most learned man upon earth. But can a man conquer or make himself perfectly familiar with every science and every thing? By no means—yet nevertheless he should have his mind so well stored with the general principles of all the sciences, that he can be guided by them when it becomes necessary to be more particular, and to know, when he employs a man devoted particularly to any one branch, whether he is competent to the task, and will discharge his duty to him with fidelity and precision.—*Maine Farmer.*

"The constant habit of enjoying good things is hurtful."—*Pub. Lec.* Nothing is more prejudicial to the health or constitution than a too great indulgence in luxuries. Use but do not abuse the good things of the world.

"The love of money increases with our wealth, and he who possesses the least in general wishes the least for it."—*Juvenal.*

THE CULTIVATOR—JULY, 1835.

TO IMPROVE THE SOIL AND THE MIND.

LOOK AHEAD!

Our northern farmers should be admonished, by the scarcity of cattle fodder, coarse grain and vegetables during the last spring, and by the inauspicious prospects of the season, to adopt extra means to provide for the coming winter. In this neighborhood, we may anticipate great loss in our wheat crop from the grain worm. In the south, particularly in Virginia, it is already ascertained that this crop will prove greatly deficient. Our Indian corn has been planted late, on account of the backwardness of the season; and the uncommon devastations of the grub and wire-worms have rendered it necessary to plant much of it a second time. Our meadows are unpromising, and the worms are doing much injury in them also. On the whole, we have reason to apprehend a scarcity, though even this apprehension, should it become general, will tend to economy and better management. The season will still admit of expedients to mitigate or to avert the anticipated evil. Some of these we will venture to enumerate, viz:

1. *Millet* may yet be sown, by those who can procure the seed. It may be sown broad-cast, at the rate of four to six quarts an acre, and harrowed in, on any tolerable soil; and though it may not mature its seed, if cut and cured will serve as an excellent winter fodder, and will yield at the rate of one or two tons the acre, according to the richness of the soil. It is cut and cured like hay.

2. *Turnips.*—These may be sown all this month, as a separate crop, or among Indian corn, at the last dressing. In open planting, and where the corn has partially failed, a considerable crop may be expected, and more particularly if the corn is cut and stooked, as our practice has uniformly been, as soon as the grain becomes glazed. The yellow Aberdeen keep best. The crop may be secured in pits, as directed for ruta baga, taking the precaution, *by all means*, of limiting the breadth of the pits to 2½ or 3 feet, and of giving vent holes for the rarified air to escape at the crown of the pile. They should be deposited in as dry a condition as possible.

3. *Corn stalks and husks.*—The ordinary value of these may be trebled or quadrupled as cattle fodder, by the mode we have often recommended in the Cultivator, particularly if they are cut small and steamed.

4. *Potatoes, pumpkins and apples.*—By husbanding these, and not permitting them to be wasted through carelessness, and by COOKING them for swine, a great saving of coarse grain may be made. Let it be remembered, that the value of these, for hog feed, is at least doubled by the process of cooking, intimately mixing them, and suffering the mass to become sour before it is fed out.

5. *Cut provender.*—We have the testimony of some of the most eminent horse and cattle managers in Great Britain and in the United States, founded on numerous and nicely managed experiments, that by cutting the straw and hay for our domestic animals, *a saving of more than fifty per cent* may be effected. The ordinary ration for a horse, is 28 lbs. of hay for 24 hours. It is found, that by cutting and mixing it with their grain, 8 to 12 lbs. will do as well as 28, fed in the ordinary way. But one fact is to be borne in mind—the feed must be given in mangers and not in racks. One-third to one-half of our hay is wasted, from the difficulty of masticating the long stocks, and from our slovenly mode of feeding it either on the ground, where much is trodden under foot and spoilt, or in illy constructed racks.

6. *Buckwheat*, though not a common crop with good farmers, may be a profitable one in 1835. It may be sown during the coming fortnight in the north. A new kind, denominated *Indian Wheat*, the seed of which is small, is represented to be superior in quality, and more productive, than the common kind.

BUDDING.

The effect of propagating choice fruit, about a farmer's premises is, figuratively, to grow the rose where only grew the thorn, and literally, to provide for one's family and friends, some of the choicest luxuries of life; and these luxuries far surpass those of a like kind which are purchased with money, because upon one's own trees, they may be permitted to attain their highest perfec-

tion, and because they are rendered more endearing by the personal care and labor which we bestow on their culture.

We now proceed, agreeable to our promise in the 2d No. of the Cultivator, to describe the mode of propagation by budding. This mode has several advantages over grafting. It is more readily performed, with fewer implements, less preparation, and with greater success; it does not injure the stock if unsuccessful, and the operation may be twice or thrice repeated the same year, as the season for its performance is protracted, for some one or other of the varieties, for some three months. Although July and August constitute the ordinary season for budding, the plum and the cherry may often be budded in the latter part of June, and the peach, apricot and nectarine as late as the middle of September. Youth may readily acquire the art, by a little practice, under the directions we are about to give; and we know a young lady who is an adept in it, and who practises it annually as a pleasant recreation, as well as a useful labor. We have often been treated with delicious peaches produced from the buds which she had inserted.

The first consideration is to provide stalks, if this provision has not already been made. Seeds may be collected the coming season, in almost every family. Those of stone fruit may be mixed with earth, or deposited in a hole in the garden, and in the autumn buried superficially in the earth, to expose them to the expanding influence of the frost; and in the spring those of the peach and plum that have not burst the shell should be cracked, and the whole sown in a well prepared seed bed. The cherries may be sown immediately after they are taken from the fruit, and the apple, pear and quince either in autumn or spring. All the kinds will generally grow the first season. If transplanted in June, and well treated, the peach will do to bud in September following, and the others in two and three years, if put into nursery rows, three feet apart, and a foot distant in the rows, and well taken care of. The same rule applies to plants as to animals: the better condition they are kept in while young, the more profitable they will become at maturity. Thus two or three roods of ground will suffice a farmer for a nursery of choice fruit, from which he may replenish his orchard and his garden at pleasure, and readily appropriate to his use every new variety which comes under his observation. No one will regret the trifling labor and attention which he has bestowed upon a little plantation of this kind, after he has began to realize the fruits of it. Ornamental shrubs and trees, to embellish the grounds about his buildings, may be added without cost, and with trifling labor.

A bud is an organized plant in embryo, with roots, branches and foliage, and like a seed, possesses individual vitality, capable of development and the reproduction of its species. The process of budding is the transferring this embryo plant from its parent tree to another tree, which must at least be of the same genus, if not of the same species. The apricot and nectarine may be, and generally are, budded upon the peach; the plum and the peach are budded on each other, and the pear and apple may be worked on the wild crab and hawthorn—and the former is put on the quince to produce dwarf trees. To render the transfer or budding successful, three things are requisite: 1. That the bud be in a proper condition to transfer; 2, that the stalk be in condition to receive and nourish it; and 3, that the transfer be skilfully made. The bud ought to be matured, i. e. of full growth, and yet not so hard and firm as to cause injury in separating it from its parent. The stock must peel freely, as this is necessary for the insertion of the bud, and indicates the presence of what is termed the cambium, which is the soft partially formed woody matter which underlays the bark, which will ripen into indurated wood—is the source of nourishment to the bud, and the bond of union between it and the stock. The operator must use precaution that he injures neither the bud, the bark nor the cambium, as these all exercise important offices in effecting the union; and he must withal take care to apply his ligatures properly. It will be seen from these remarks, that both the stock and the graft should be in a state of active growth, and the more vigorous the better, when the budding process is performed. It is also preferable to bud when the weather is cloudy, but not wet. Twigs for budding may be preserved for many days with care. They should be immediately divested of their leaves, but not wholly of their leaf-stocks or petioles, to prevent the exhaustion of moisture, and may then be wrapped in fresh grass, wet cloths, or with their butt ends preserved in moisture.

Fig. 1.

The only implement necessary is a budding knife, (fig. 1,) and the only preparation some bass matting, or the inner bark of the basswood or linden.

Prof. Thouin enumerates twenty species or varieties of grafting, most of which are only practised by amateurs and professional gardeners. We shall describe only the common mode, which is in general practice in nurseries. We take it from the Encyclopedia of Gardening.

"*Shield-budding*, or T budding, is thus performed:—Fix on a smooth part of the side of the stock, rather from them towards the sun, and of a height depending, as in grafting, on whether dwarf, half, or whole standard-trees are desired, then, with the budding-knife, make a horizontal cut across the rind, quite through to the firm wood; from the middle of this transverse cut, make a slit downward, perpendicularly, an inch or more long, going also quite through to the wood. This done, proceed with all expedition to take off a bud; holding the cutting, or scion, in one hand, with the thickest end outward, and with the knife in the other hand, enter it about half an inch or more below a bud, cutting nearly half way into the wood of the shoot, continuing it with one clear slanting cut, about half an inch or more above the bud, so deep as to take a part of the wood along with it, the whole about an inch and a half long; (*a* fig. 2) then directly with the thumb and finger, or point of the knife, clip off the woody part remaining to the bud; which done, observe whether the eye or germ of the bud remain perfect; if not, and a little hole appears in that part, it is improper, or as gardeners express it, the bud has lost its root, and another must be prepared. This done, placing the back part of the bud or shield between your lips, expeditiously with the flat haft of the knife separate the back of the stock on each side of the perpendicular cut, clear to the wood, (*c*) for the admission of the bud, which directly slip down, close between the wood and bark, to the bottom of the slit, (*d*.) The next operation is to cut off the top part of the shield (*b*) even with the horizontal first made cut, in order to let it completely into its place, and to join exactly the upper edge of the shield with the transverse cut, that the descending sap may immediately enter the back of the shield, and protrude granulated matter between it and the wood, so as to effect a living union. The parts are now to be immediately bound round with a ligament of fresh bass, (*e*) previously soaked in water, to render it pliable and tough, beginning a little below the bottom of the perpendicular slit, proceeding upward closely round every part, except just round the eye of the bud, and continue it a little above the horizontal cut, not too tight, but just sufficient to keep the whole close, and exclude the air, sun and wet.

Fig. 2.

"*Future Treatment.*—In a fortnight at farthest after budding, such as have adhered may be known by their fresh appearance at the eye; and in three weeks all those which have succeeded well will be firmly united with the stock, and the parts being somewhat swelled in some species, the bandage must be loosened, and a week or two afterwards finally removed. The shield and bud now swell in common with the other parts of the stock, and nothing more requires to be done till spring, when, just before the rising of the sap, they are to be headed down close to the bud, by an oblique cut, terminating about an eighth or quarter of an inch above the shield. In some cases, however, as in grafting, a few inches of the stalk is left for the first season, and the young shoot tied to it for protection from the winds."

CALCAREOUS MANURES.

We have been reading with much interest, and we believe profit, "*Ruffin's Essay on Calcareous Manures*," a copy of the second edition of which has been politely forwarded to us by the author. It is a pamphlet of 116 closely printed 8vo. pages—is sold by J. W. Campbell, Petersburgh, and Gideon B. Smith, Baltimore, booksellers, at 75 cents the copy, and by the author, at Shellbanks, Va. at a reduced price by the quantity.

Mr. Ruffin is a gentleman of chemical knowledge, a practical farmer, and editor of the Farmers' Register, a work replete with valuable information in rural affairs. He seems to be peculiarly fitted, by location, talents and persevering investigation, for the work he has furnished us; and we think he has succeeded in pointing out the defects which exist in a portion of our soils, and in suggesting the sure means of correcting them. We do not hesitate to say, that the pamphlet will prove a valuable acquisition to any farmer, who has a spark of ambition to better his practice, and we hope the author will meet the ample reward, in the sale of the work, which he justly merits, for his patient labors to improve the condition of our husbandry.

The work is divided into three parts, viz. 1, Theory; 2, Practice, and 3, Appendix. The second part details the author's experiments with calcareous manures upon his farm, and the results, for nearly twenty years. These go to sustain, we think pretty

fully, the theory laid down in the first part. The lands upon which the experiments were made, are somewhat of the character of those which extend from the east end of Long-Island to Florida, upon the tide waters of the Atlantic; and, with the exception that they probably contain more clay, appear to be similar to what are denominated the Albany barrens, Kinderhook plains, and to a large portion of Saratoga county. The natural growth is pines, oaks and whortleberry bushes, and, when cleared, common sorrel; the soil is destitute of stones, and the earthy matters are, apparently a deposite from overflowing waters, at a remote period of time. The experiments were made with shell marl, containing 25 to 27 per cent carbonate of lime, mixed with sand.

We will remark here, that as the calcareous earth is the benefitting property of the marl, other calcareous earths may be substituted; and on sands, clay marls it is believed, if convenient, may be more profitably applied than shell marl, which latter does not often occur in the interior. Mr. R. gives the following classification of manures, *a* designating its strongest or most valuable agency, *b* the next strongest and so on.

"Substances which form manures, are either

"*Alimentary*, or serving as food for plants—as feathers, hair, woollen rags, pomade bones,(*b*) all putrescent animal and vegetable substances, as dung, stable and farmyard manures.(*a*) straw.(*a*) green crops ploughed in (*a*)

"*Solvent* of alimentary manures,—as quick-lime (*a*) potash and soap ley?(*a*) ashes not drawn?(*a*) paring and burning the surface of the soil (*a*)

"*Mordants*—serving to fix other manures in soils,—as calcareous earth, including lime become mild by age.(*a*) chalk (*a*) limestone gravel,(*a*) wood ashes (*b*) fossil shells (*a*) marl (or calcareous clay).(*a*) old mortar.

"*Neutralizing* acids,—as all calcareous manures,(*b*) quicklime,(*b*) potash and soap ley.(*b*) wood ashes (*c*)

"*Mechanical*, or improving by altering the texture of soil—as all calcareous manures.(*c*) marl.(*b*) clay, sand, fermenting vegetable manures,(*b*) green manures (*b*) unfermented litter.(*b*)

"*Stimulating*,—as nitre? common salt?

"*Specific*, or furnishing ingredients necessary for particular plants—as sulphate of lime, or gypsum, (for clover,) phosphate of lime, (for wheat,) in bones.(*a*) and drawn ashes.(*a*) salt?"

"*Calcareous earth*, or *carbonate of lime*," says Mr. R. "is *lime* combined with *carbonic acid*, and may be converted into pure or quick-lime by heat—and quick-lime, by exposure to the air, soon returns to its former state of calcareous earth. It forms limestone, marble, chalk and shells, with very small admixtures of other substances. Thus the term *calcareous earth* will not be used here to include either *lime*, in its pure state, or any of the numerous combinations which lime forms with the various acids, except that one *(carbonate of lime)* which is beyond comparison the most abundant throughout the world, and most important as an ingredient of soils. Pure lime attracts all acids so powerfully, that it is never presented by nature except in combination with some one of them, and generally with the carbonic acid. When this compound is thrown into any stronger acid, as muriatic, nitric, or even strong vinegar,—the lime being more powerfully attracted, unites with, and is dissolved by the stronger acid, and lets go the carbonic, which escapes with effervescence in the form of air. In this manner the carbonate of lime, or calcareous earth, may not only be easily distinguished by siliceous, and aluminous earth; but also from all other combinations of lime." p. 9.

We mark another extract from p. 10, with the view of impressing upon the mind of the reader, the very important truths which it conveys, and which are seldom duly appreciated by the ordinary farmer.

"All earths, when as pure as they are ever furnished by nature, are entirely barren, as might be inferred from a description of their qualities [described in p. 9]. nor would any addition of putrescent manures enable either of the earths to support healthy vegetable life.

"The mixture of the three earths in due proportions, will correct the defects of all. and with a sufficiency of animal or vegetable matter, putrescent, and soluble in water, a *soil* is formed in which plants can extend their roots freely, yet be firmly supported, and derive all the needful supplies of air, water and warmth, without being hurt by too much of either. Such is the natural surface of almost all the habitable world: and though the qualities and value of soils are as variable as the proportions of their ingredients are innumerable yet they are mostly so constituted, that no one earthy ingredient is so abundant, but that the texture of the soil is mechanically suited to some one valuable crop, as some plants require a degree of closeness, and others of openness in the soil, which would cause other plants to decline or perish."

After describing the soil, the general characteristics of which we have mentioned, and the state of agriculture in the tide water district of Virginia, Mr. R. proceeds, in chap. 3, to describe the different capacities of soils for receiving improvement, in which he lays down the following propositions:

"Proposition 1. Soils naturally poor, and such soils reduced to poverty by cultivation, are essentially different in their powers of retaining putrescent manures; and under like circumstances, the fitness of any soil to be enriched by any manures, is in proportion to what was its natural fertility.

"2. The natural sterility of the soil of lower Virginia, (and of like soils elsewhere,) is caused by such soils being destitute of calcareous earth, and their being injured by the presence and effects of vegetable acid.

"3. The fertilizing effects of calcareous earth are chiefly produced by its power of neutralizing acids, and of combining putrescent manures with soils, between which there would otherwise be but little chemical attraction."

"4. Poor and acid soils cannot be improved durably, or profitably, by putrescent manures, without previously making them calcareous, and thereby correcting the defect in their constitution.

"5. Calcareous manures will give to our worst soils a power of retaining putrescent manures equal to that of the best—and will cause more productiveness—and yield more profit than any other improvement practised in lower Virginia."

The defect in many of the pine lands in the interior, is not only the want of calcareous, but of argillaceous matter—clay: they lack the adhesive quality, which calcareous earth in a measure, but not sufficiently, supplies. The blue and the other clay marls, which are found, in many districts, to underlay the soil, offer, therefore, the most efficient means of improving our sands. We have occasionally, though not systematically, applied the blue clay, containing 25 to 30 per cent carbonate of lime, on literally blowing sand hills, at the rate of 3 to 4 hundred bushels, or 20 cart loads, to the acre, and the results fully sustained the high opinions of Mr. R. of the benefits imparted to these soils by calcareous applications. The soil has become more adhesive, sorrel has disappeared, and there is no longer the former marked difference in the products of the hill and the swale. We have often expressed the opinion, produced by these results, that a load of blue clay has been of more permanent benefit to some of our land than a load of putrescent manure. And in passing over the sandy plains which skirt the rich bottoms on the Connecticut river, we have thought that our blue clay was the material wanted to impart to them adhesiveness and fertility, with the aid, however, of putrescent manures which, after all, afford the only alimentary nourishment to plants.

Calcareous earth is an essential ingredient in all good soils, though much less of it is required than of sand or clay, and may therefore be artificially supplied at comparative small expense. From 20 to 40 cart-loads per acre of clay marl would double, if not quadruple, the value of our light sands. We hope soon to be able to detail some interesting experiments upon marling, by a gentleman of high standing.

In discussing the second proposition, Mr. Ruffin details the results of nineteen chemical examinations of soils, taken from different localities, all from situations which, from their proximity to calcareous rock, were supposed most likely to present highly calcareous soils. In only four of these experiments did he find any finely divided calcareous earth, and in these but in very small proportions. These experiments show the error of an opinion generally entertained, that the soil in limestone formations always abound in carbonate of lime. Where the limestone is hard, and in its natural beds, the debris, or pulverized portion, is often so minute as to form hardly a perceptible constituent. This fact explains the utility of the practice which prevails in Pennsylvania, as communicated to us by Dr. Darlington, of applying lime on lime-stone lands. The benefits of the application seem to be twofold: In the form of quick lime it operates as a solvent, and renders soluble the vegetable matter in the soil; and in that of a carbonate, or mild lime, it improves the soil mechanically, and increases its capacity for combining with, and preventing the waste of, putrescent manures. Mr. Ruffin also examined specimens of soils from the western and southern prairies, from localities abounding in shell marl, or soft and decomposing limestone. These gave an abundant proportion of carbonate of lime, and in some instances it existed in excess, so as to render the soils sterile.

In acid and neutral soils, Mr. Ruffin supposes that carbonate of lime may have originally existed, and that it may have been de-

* "When any substance is mentioned as *combining* with one or more other substances, as different manures with each other, or with soil, I mean that a union is formed by chemical attraction, and not by simple mixture. *Mixtures* are made by mechanical means, and may be separated in like manner; but *combinations* are chemical, and require some stronger chemical attraction to take away either of the bodies so united.

"When two substances combine they both lose their previous peculiar qualities, or *neutralize* them for each other, and form a third substance different from both. Thus, if certain known proportions of muriatic acid, and pure or caustic soda, be brought together, their strong attraction will cause them to combine immediately. The strong corrosive acid quality of the one, and the equally peculiar alkaline taste and powers of the other, will neutralize or entirely destroy each other, and the compound formed is—common salt—the qualities of which are strongly marked, but totally different from those of either of its component parts."

composed, and the lime taken up, by the gradual formation of vegetable acid, until the lime and the acid neutralized and blanched each other, leaving no considerable excess of either. There are several of the vegetable acids, and among them the oxalic, which abound in sorrel, that have a stronger affinity for acids than carbonic acid, and when coming in contact with carbonate of lime, would of course decompose it and unite with the base. These acids, Mr. R. contends, are poisonous to cultivated crops. The burning of newly cleared lands is so essential to the first crop, that no good return is expected unless there has been "*a good burn*," and spots of a new fallow which escape the fire are comparatively barren, until the soil has been broken up and ameliorated by atmospheric or other influence. The fire does not add to the vegetable matter in the soil; it diminishes it; but it produces some chemical change beneficial to the crop, either by the solvent quality of the ashes, which it produces, or by neutralizing some noxious property in the soil.

In discussing the 3d and 4th propositions, our author shows, that "silicious earths can have no power, chemical or mechanical, either to attract enriching manures, or to preserve them when actually placed in contact;" and that they "give out freely all they have received, not only to a growing crop, but to the sun, air and water, so as soon to lose the whole;" that "aluminous earth, by its closeness, mechanically excludes those agents of decomposition, heat, air and moisture, which sand so freely admits;" and that therefore although clay lands retain manure longer, they only retain it mechanically. The means by which calcareous earths act as improving manures, are, "*completely preserving putrescent manures from waste*, and yielding them freely for use;" —"their *power of neutralizing acids*," and of "*altering the texture and absorbency of soils*."

We will close our notice of this valuable work, for the present, with another extract, explaining the author's views of the operation of manures in the soil, which strongly inculcate the propriety of applying dung in its unfermented, or partially fermented state, of ploughing it in, and of cropping the ground with hoed plants, which come to maturity in autumn. We propose, however, unless admonished that we are trespassing upon the publisher's rights, to copy some of Mr. Ruffin's experiments with marl, to show to the readers of the Cultivator the positive and important benefits which have resulted from marling, and to serve as a guide in some measure to their practice.

"Except the very small proportions of earthy, saline and metallic matters that may be in animal and vegetable manures, the whole balance of their bulk (and the whole of whatever can feed plants,) is composed of different elements, which are known only in the form of *gases*—into which they must be finally resolved, after going through all the various stages of fermentation and decomposition. So far from sinking in the earth, these final results could not be possibly confined there, but must escape into the atmosphere as soon as they take a gaseous form, unless immediately taken up by the organs of growing plants. It is probable that but a small portion of any dressing of manure remains long enough in the soil to make this final change—and that nearly all is used by growing plants, during previous changes, or carried off by air and water. During the progress of the many changes caused by fermentation and decompostion, every soluble product may certainly sink as low as the rains penetrate: but it cannot descend lower than the water, and that, together with the soluble manure, will be again drawn up by the roots of plants. One exception, however, seems probable. Should the soil need draining, to take off water passing beneath the surface the soluble manure might be carried off by those springs: and this supposed result receives strong confirmation from the complete loss of fertility which is often observed in spots over a foundation that is springy in wet seasons, but which have been kept under tillage, without being drained. We are as yet but little informed as to the particular changes made, and the various new substances successively formed, and then decomposed, during the whole duration of putrescent manures to the soil—and no field for discovery would better reward the investigations of the agricultural chemist. For want of this knowledge, we proceed at random in using manures, instead of being enabled to conform to any rule founded on scientific principles: nor can we hope so to manage manures with regard to their fermentation, the time and manner of application, mixing with other substances, &c. as *to enable the crops to seize every enriching result as soon as it is produced, and to postpone as long as possible the final results of decomposition*—which ought to be the ends sought in every application of putrescent manure."

We cannot close this brief notice, without asking the intelligent reader to reflect on the incalculable advantage of scientific husbandry, when combined with practical operations. Mr. Ruffin, we suspect, is self-taught in chemical science; and yet within his limited sphere of operations, he is teaching invaluable truths, mostly before unknown or unappreciated, to his countrymen, which ere long may, in all probability, lead to the addition of annual millions to the value of our agricultural products. If such benefits can result from the limited exertions of a single individual, who is able to devote to the subject but a portion of his time, what benefits might the community not expect from the united exertions of twenty such men, specially directed to the subject, in all the departments of husbandry—in a school of Scientific and Practical Agricultural—under the liberal patronage of the state, or of associated wealth?

HARVEST DRINKS.

Every man of practical experience, at least, knows that midsummer laborers in the harvest and hay-fields, must swallow a goodly quantity of liquids in the course of the day, to supply the exhaustion occasioned by copious prespiration. Ardent spirits are now proscribed by common consent and common usage: they inflame the blood, increase thirst, rouse and foster the worst passions, and are too often the cause of fixed habits of intemperance. To discover a good substitute is a desideratum. Pure water, in large quantities is rather debilitating, and withal often hurtful. Any considerable portion of molasses, either with water or small beer, is also too relaxing, without something additional to counteract this tendency. Our common practice for two seasons was to mix one part sound cider with three of water, and to add molasses, and sometimes ginger, to suit the palate. But last season, the cider being scarce, accident led to the adoption of a new harvest beverage, which we venture to say is surpassed by no other for the grateful and healthful influence upon the strength and spirits of the harvest laborer. A Scotchman, not liking our Yankee drinks begged a little oat-meal, that he might just make a wee bit o' Scotch drink. He was indulged; and by degrees, our Yankees, Irish and English, for we happened to have all these about us, became so partial to the Scotch drink, that it was adopted as the field drink by general acclamation. It is cooling, strengthening, and allays thirst—it is truly *victuals and drink*. A respectable Scotch farmer, residing in Montgomery, assured us, that during 18 months, while employed as a shepherd among the hills of Scotland, he took not a particle of other subsistence, than oatmeal and water, and almost entirely without any preparation—and that he never enjoyed 18 months more perfect health in his life.

Here then is an excellent substitute for ardent spirits, in the labors of the harvest, which may be accessible to all, and at trifling expense—promotive of health, strength and kind feelings. Oat meal is becoming an article of commerce; it is useful, in many ways, in the economy of a family, and may be readily kept by every farmer.

To make this *Scotch Drink*, denominated *Crowdy*, put a teacup full of oat-meal into two gallons of water, and stir well before drinking.

TICKS ON LAMBS.

When sheep have been shorn, the ticks, with which they are apt to abound, seek shelter in the fleeces of the lambs, or are destroyed by the shorn sheep. They are often so numerous upon the lambs as not only greatly to annoy them, but seriously to injure their health and their growth. The following effectual method to destroy them, has been detailed to us by Judge Bostwick, of Delaware co. whose statement may be implicitly relied on.

Finding his lambs, in former years very much injured by ticks, he procured 4 pounds of tobacco, boiled it in water,—put the strained liquor into a half-hogshead tub, diluted it with water till he found on trial that it had just sufficient strength to kill the ticks in a minute or two, placed an empty kettle by the side of the tub, and when cold, proceeded to apply it to the lambs, in the manner following: One man took the lamb by his fore legs and head, and plunged it into the liquid, leaving only his head out—he next raised it and held it over the empty kettle, when a second man pressed out of the fleece all the liquid which would flow into the kettle. This completed the operation. The liquor was then turned from the kettle into the tub, and the operation repeated upon the rest of the young flock. In shearing the present year the Judge discovered but two ticks upon his entire flock.

DISEASES OF THE POTATO.

In Great Britain the potato has been subject to a disease for years called the *curl;* but as it has never appeared in our country, we refrain from noticing its character, or the modes which have been suggested for its cure. More recently, and particularly the

last season, great loss to the potato crop was experienced there from the seed rotting in the ground; and many speculations as to the cause, and the means of prevention, have been published in their agricultural periodicals. We have reason to believe that we have more or less the same cause of complaint. Our late planting last year of this crop, proved wretchedly defective, in consequence of four-fifths of the seed not growing, while those planted early throve as usual. The seed had been all cut early in May, but that planted late appeared to be defective, and the sets partially decayed. Among the many causes assigned for this evil, one in the "Irish Farmers' Journal," by Mr. Hinckley, appears to us to be the most rational, and his mode for prevention the most efficient. He says it is caused by animalcula, which swarm in the cut seed, and which ultimately destroy its germinating power; and that steeping the seed in salt and water destroys them. Of 34 acres under potatoes in 1832, a complete failure of the crop ensued, from this cause. This led to various experiments, all of which failed of being beneficial save that of soaking the seed in brine. In the seed which he had not immersed in brine, he could distinctly see, with the aid of a powerful microscope, many small white particles like eggs; and those cuts which he had immersed, presented no such appearance. This discovery impelled him to follow up the examination attentively; and every day for a short period, he continued to watch the appearance of the matter. The result was, that those white globular particles were animalcula, for in a few days they became quite visible to the naked eye in the form of maggots. The cuts that had been steeped never showed the slightest appearance of any such thing, and they retained their solidity and firmness when the other cuts were completely decayed and rotted.

An interesting experiment, *to preserve potatoes through the summer*, without destroying their vegetating principle, is published in the Edinburgh Quarterly Journal of Agriculture for March. M. De Lancy, in March, 1803, buried some potatoes of the preceding year's crop in his court yard, in a hole two and a half feet deep, under the protection of a south wall, where the sun shone but a short time in the day. On the 24th Jan. 1804, nearly eleven months afterwards, on examining them, he found, to his astonishment, that, two or three excepted which were perforated by the ground worm, though firm, they were all perfectly sound, without having in the least vegetated in any respect, fit for the purpose of planting and the use of the table, as he boiled some, and found them similar in taste and flavor to new potatoes.

This experiment, in connexion with others which we have seen noticed, goes to show, that it is the temperature, and not the season, which induces the sprouting of potatoes. The practical improvement which the facts suggest, is to exclude the potatoes which we wish to preserve for summer use from atmospheric influence and a warm temperature, in vaults, deep trenches or cool cellars. All vegetables keep best in a temperature a little above the freezing point. The potato, in particular, soon loses the fineness of its flavor, and becomes sodden, if stored in a warm cellar and exposed to the influence of the atmosphere. A farmer of Schoharie has been accustomed to bring fine Spitzenburgh apples to market on the 4th of July; and the method he adopts to preserve them to so unusually a late period, is simply, we are told, to keep them, after they are gathered, in a temperature as little above 32° as possible.

ECONOMY OF FODDER.

The editor of the Maine Farmer has an appropriate and excellent article on this subject. Quoting the adage that "experience is the best schoolmaster," he thinks the late scarcity of cattle food ought to admonish the farmer to prevent a repetition of the evil, 1, by economising their hay and straw by *cutting it* before they feed it to their stock; 2, by cultivating root crops more extensively; and 3, by not selling off their course grain until they know they will not want it themselves.

It has been demonstrated by repeated experiments, that a great saving of hay is effected by cutting it in the straw or hay cutter before it is fed out. It prevents waste—the whole being eaten and digested, and with less labor by the animal, when thus cut. In very many of the horse establishments in Great Britain, and even in our country, the custom of cutting feed has been adopted with great advantage. The ordinary ration of hay for a horse is 28 lbs.; and it has been found, that when cut and mixed with the daily provender, that from 8 to 12 lbs. of cut hay will answer as well as 28 lbs. uncut. Here then, with a little extra labor, which every farmer can bestow in winter, without loss, at least 50 per cent of a farmer's hay may be saved in seasons of scarcity; and this item, during the recent scarcity, would have amounted to no inconsiderable sum.

One word, at this time, upon our perhaps hackneyed topic of root culture, may exhibit its advantages in a favorable light. Our stock was fed with ruta baga daily till about the 24th May, when our store became exhausted; and we were consequently enabled to sell much hay, which but for these roots they would have required, and to obtain for it a high price. Now we consider 2 bushels of ruta baga better than a ration, or 28 lbs. hay, for any domestic animal; and by this estimate, the thousand bushels of roots, which we estimate to have fed out, has enabled us to sell seven tons of hay, which at $15 per ton, not deemed high during the spring, would bring the value of our roots to $105. Again—say the average product of hay is two tons the acre, and of ruta baga 600 bushels. By the estimate we have made of the ration, the acre of hay would keep an ox 143 days, and the acre of ruta baga 500 days. The hay ground would afford after feed or rouen; the ruta baga early feed till 25th June, or a cutting of clover hay. The difference in labor on the two crops would be in a measure equalized by the value of the turnip tops. With proper soil and implements, and after a little experience, the cost of ruta baga need not average, to the cultivator, over two to three cents the bushel. It is proper that we should express our doubt, whether this root will succeed well south of our state; the failure of Mr. Cox, of Burlington, N. J. and others, in their culture, has induced these doubts. In the north, however, this plant is at home, and will not fail to requite well for the labor bestowed in its culture.

A new machine for cleaning hemp is announced in the Edinburgh Quarterly Journal of Agriculture, which promises to supersede all others, and, if what is reported of it be correct, to render the hemp crop far more profitable than it has been hitherto. The machine is composed of two metal plates, supported by springs to modulate the compressure, and the hemp in passing through these plates undergoes a friction, and after passing through several rollers, is wholly divested of its glutinous matter, and is of a soft delicate fibre, which may, after being hackled, be spun and applied to the same purposes as the finest flax. The apprehension is, that strength must be sacrificed in obtaining fineness of fibre.

The young States of Ohio and Indiana, are setting a noble example to their elder sisters, in making legislative provision for the establishment of County Agricultural Societies. In the latter, a State Board of Agriculture is established, which we perceive by the papers of that state is actively engaged in the organization of county societies.

A correspondent at Goshen, sends us the following directions for making superior Indian *Johnny-cakes*, with a request that they may have a place in the Cultivator.

"Take one quart of milk, three eggs, one tea-spoonful salaratis, one tea-cup of wheat flour, and Indian meal sufficient to make a batter of the consistence of pan-cakes. Bake quick, in pans previously buttered, and eat warm with butter or milk. The addition of wheat flour will be found to be a great improvement in the art of making these cakes. Those who have not got eggs will find that it will do very well without.

Siberian Lyme-grass.—It is announced in the last Edinburgh Quarterly Journal of Agriculture, that this grass, recently introduced, promises to become a valuable acquisition to the farmer. It is a broad leaved, seemingly coarse grass, will grow in light soils, gives a very abundant product, and is eaten with avidity by all animals.

Animalized carbon, is the term applied to a new manure now employed in France and Denmark, and for the manufacture of which, a Frenchman has obtained a patent. It is sold at 35s. ($7.77) per ton. A Dane has sold 250 tons in Scotland.

The evils attendant on sloth are only to be conquered by attention to business.—*Seneca.* Without employment, the mind becomes relaxed and inert.

CORRESPONDENCE.

Wallingford, June 10, 1835.

Mr. EDITOR—A correspondent in your paper for June, inquires "*whether we have in this country any thing answering to the* PEAT *of the old world?*" to which you made a brief reply; but supposing that further particulars might not be without interest to many of your readers, I send you the following, to be disposed of as you deem best.

"*Peat*," says Bakewell, (Geology, p. 329, 1st Am. Ed.) "though often classed with alluvial soils, *is evidently a vegetable production.*" "It accumulates," says Prof. Hitchcock, (Geol. Rep. Mass. p. 118,) "in the bottom of ponds, lakes, estuaries, &c. In this mud, various aquatic plants take root, and by their decay swell the deposite already made. At length the pulpy mass reaches the surface, when the sphagneous and other masses take root in it, along with various other plants, and by their gradual decomposition the pond or lake in the course of ages, becomes converted into a swamp or marsh." Thus are the materials furnished for a bed of peat.

The changes produced upon this accumulation of matter, in its transformation, are most clearly described by Dr. McCulloch, in his history of the Western Isles of Scotland. "The process," he says, "by which these vegetables are converted into peat, is most clearly seen in the *sphagnum*, (peat moss.) As the lower extremity of the plant dies, the upper sends forth fresh roots like most of the mosses, the individual thus becoming in a manner immortal, and supplying a perpetual fund of decomposing vegetable matter. The growth of peat keeps pace with the vegetable from which it is formed. When the living plant is still in contact with peat, the roots of the rushes, and ligneous vegetables, are found vascillating between life and death, in a spongy, half decomposed state. Lower down, the pulverized carbonaceous matter is seen mixed with similar fibres, still resisting decomposition. These gradually disappear, and at length, a finely powdered substance alone is found, the process being completed by the destruction of all the organized bodies." *(Dr. McC. p. 130, Bake. 33.)*

Such is a brief account of the origin, growth and nature of peat beds, and is applicable to all countries, though a predominance of any given species of plants, may vary its external aspect or affect its quality. "The best kinds, *(Jameson's Mineralogy, Shetland Isles,)* burn with a clear bright flame, leaving light colored ashes; but the more indifferent kinds in burning often emit a disagreeable smell, and leave a heavy red colored kind of ashes."

It is frequently kiln-dried, or rather charred, the mode of doing which, may be found at length in the Encyclopedia Americana—article *Fuel*.

In England, many of "the peat moors have disappeared before the genius of agricultural improvement," but in Scotland they are abundant at the present day, and the description of them by Prof. Jameson, is an accurate description of all peat moors. In some situations, peat increases with astonishing rapidity, overruning land depastured within the memory of man.

It abounds in Connecticut and Massachusetts, and I doubt not, in all the New-England States.

Peat, also possesses the power of preserving animal matter from putrefaction to a surprising degree. Fleshy parts of the Mastodon have been found in peat. *(Bake. p. 332.)*

In the *Philosophical Transactions* for 1734, Dr. Balgery gives an account of two human bodies preserved entire in peat for fifty-nine years.

I am, dear sir, respectfully yours, A. B. CHAPIN.

Knox, June 10, 1835.

J. BUEL—Dear Sir—I communicate to you my method of increasing the quantity of manure from the hog-pen. If you think an insertion in the Cultivator may be the means of aiding some farmer to profit by the practice, it is at your disposal.

I make a yard adjoining the hog-pen, equal to ten or twelve feet square for each hog, in which I deposite a layer, at least a foot thick, of black swamp earth, such as may be easily obtained in a dry time by almost every farmer. The hogs having a way to pass, deposite all their manure in the yard, which leaves the pen clean and healthy, a decided advantage in fattening hogs. If the yard becomes very muddy, I throw in litter. After the hogs are killed, I deposite another layer of the like earth, previously heaped, of about half the thickness of the former, and put up my store pigs to winter, which I think is far better than to suffer them to run at large. In the spring, I have a fine rich yard of manure, which I verily believe, when judiciously applied, pays more than a hundred per cent on all the expense. Yours respectfully, AMOS CRARY.

Tillage Husbandry.

EXTRACTS FROM LORAIN'S HUSBANDRY.

The texture of any soil is most advantageously altered by the roots and tops of the grasses, properly applied and ordered.

Grass lays, when properly applied and cultivated, are very productive, and enrich the soil far beyond what is generally supposed, or can in fact be accomplished by the usual practice. They also alter the texture of it so much, that it is capable of growing valuable crops, which were before opposed to its natural texture, and which could never have been profitably grown on it, until this alteration has been effected.

The judicious application of this vegetation, will often supersede the necessity of riding and under-draining.

If nature and reason had been sufficiently consulted in the practice of husbandry, it would have been generally known, that ploughing a considerable mass of vegetation under a sandy soil, will as effectually prevent an injurious evaporation of moisture from it, as the application of any other substance commonly used for that purpose, until the vegetation is decomposed.

The fertility of rich, sandy soils also determines, that an injurious evaporation of moisture from them, is greatly retarded, even by the enriching matter arising from the decomposition of the vegetable substances while it continues in the grounds. Hence it is, that we hear but little complaint of the sandy texture of soils, until these substances, and the fertilizing matter arising from the decomposition of them, have been considerably exhausted by an injudicious husbandry. On the contrary, we find that the renters of land generally prefer sandy soils, while they continue rich; the cultivation of such grounds is far less laborious than those of a firmer texture, and may be progressing, when continued rains have put a stop to the plough in soils that are more retentive of moisture.

It is also worthy of remark, that the nutriment arising from the vegetation ploughed under the soil, will greatly promote the vigor of the plants: also, that the close shade formed by this increased vegetation, is well calculated to defend the soil from the injurious influence of the sun and air; whereas the mixture of clay, &c. with a sandy soil, merely alters the texture of it.

Many gentlemen of distinguished talents fondly imagine, that alterations made by combining the different earths properly, will effect a more productive, as well as lasting improvement, than can be made in any other way; it will be found, however, that no combination of the simple earths, without the aid of animal or vegetable matter, can create a soil calculated for the efficient growth of plants: also, that after the animal and vegetable matter contained in this improved soil, has been exhausted, it, as well as the unimproved ground, will be unproductive. Plants cannot prosper in any soil, unless a sufficiency of nutriment has been provided for them. Still it is readily granted, that a happy mixture of the different earths greatly favors vegetation; but this cannot be obtained, where nature has not formed it, without great labor and expense. No fact is more obvious in our recent settlements, than that every soil well stored with animal and vegetable matter is productive, until these substances have been too much exhausted: also, that after this evil has been effected, the fertility of the exhausted soil is restored, so soon as a sufficiency of animal and vegetable matter has been incorporated with it. Why then should we encounter the enormous labor and expense of altering the texture of our grounds, by mixing other earths with them, when we can grow luxuriant crops, and gradually improve all the different soils, without having recourse to this Herculean task?

How ridges should be formed and cultivated in retentive soils.

The texture of stiff, retentive, clay soil, may be also as readily altered by grass lays; for (as has been before observed,) every furrow slice forms an under drain, more especially if a good crop of grass be turned under the sod. The vegetation thus applied, more effectually cuts off the communication between the cold clay underneath and furrow slice above: also furnishes a wider opening between the two to run off the moisture. This will frequently render ridging up useless, where it could not be dispensed with in the usual mode of cultivation; and often save the expensive practice, of draining in still moister soils: provided the grounds be formed into ridges of a suitable width, and the cleaning out furrows be properly regulated and cleaned out. But this is not all, for the innumerable roots of the grasses divide the soil minutely. The fermentation of them expands and opens it, and their gradual decay not only greatly enriches it, but also furnishes an inconceivable number of hollows or cavities throughout its whole extent. These openings being equal to the length, thickness, and number of the roots of the grasses and weeds, they are well calculated to admit the ready progress of the roots of the growing plants through every part of the soil. This, together with the powerfully expanding force of fermentation, and the nutritive matter obtained by decomposition, forms a light, open, artificial bed, well prepared for the growth of plants. When the soil is thus ordered, they do grow luxuriantly, and produce abundantly: provided the succeeding cultivation be calculated to secure these very obvious advantages.

After the grounds have been prepared as above described, and the seed planted at a depth suitable to the economy of the plants, a level and superficial cultivation should follow, even when the soil is retentive of moisture. In case, however, of two much moisture for a level preparation of the lay, the sod should be properly ridged up at first. To prevent the middle of the ridge from being injuriously high, the two first furrows

ought barely to meet each other in the centre of it.* As ridges are calculated to produce artificial droughts, the least possible declivity is best, especially as the under drains formed by the furrow slices, together with the clearing out furrows, will be found sufficient to run off the superfluous moisture. After the ridges have been formed, the roller should be used to sink those parts of the furrow slices that, by lying hollow, are raised above the rest. When this has been done, the seams between the furrow slices ought to be well closed with the tined harrow. If the sod be very compact, (which generally happens in retentive lays,) a much better preparation for planting is obtained, by running the hoe harrow once or twice through the soil, before the tined harrow is used The seams between the furrow slices will also be much better closed by this practice, as more loose earth will be obtained.

Care should be taken to keep the cleaning out furrows open during the cultivation of the crop This may be done by the plough going up and down them, in the same tract, unless the excess of moisture render it necessary to preserve their original width. As the inequality in the surface will often prevent the moisture from running from one end to the other of the furrow slices, it should, in that case, meet with no obstacle that would prevent its escape at the sides of the ridges, into the cleaning out furrows †

In the cultivation for the small grain that follows the fallow crop, care should be taken to order the course of the hoe and tined harrows, in that way best calculated to reduce the ridges as near to the form of flat beds, as can be done by the harrow going lengthwise of the furrows: as when I shall hereafter describe the proper cultivation for wheat sown in the fall, it will clearly appear, that if the cleaning out or water furrows are not wider apart than half a perch, this crop will not suffer, when sown on flat beds; even if the soil is not only retentive of moisture, but also spouty or springy to a considerable degree. It is evident, that the rotundity of ridges is very injurious, unless the spring and summer happen to be unusually dripping; and quite as obvious that the sun cannot act equally on every part of them.

I am well aware, that ridges of not half this width have been used and recommended by enlightened cultivators. It, however, should be recollected that these gentlemen pursued a cultivation calculated uselessly to waste the animal and vegetable matter contained in the soil The latter, before it sinks deep into decay, has a tendency to keep the soil open, by separating its parts, even when it is only mixed through it, but this is far better effected by forming under drains with the furrow slices, well stored with vegetation.

If the grounds be not laid down in grass, to be continued for two or more years, after one crop of grain is sown on them, red clover should be sown with the small grain that followed the fallow crop. This should be mowed but once the ensuing year, and the second crop turned under wheat, sown in the fall. In forming the flat beds for this crop, in grounds which have been ridged up, the ploughing ought to commence at the former cleaning out furrows. In this case, the water furrows will be formed in the middle of the former ridges or beds. Care should, however, be taken to put the two first furrows very closely together, or the beds will be lowest in the middle, which would be very injurious to the crop. The water furrows for this crop should also be well regulated, and properly cleaned out. As the ploughing for every succeeding round of crops will commence at the water furrows formed for the last cultivated crop, every fallow crop after the first may be grown on beds perfectly flat, or with a little rotundity, if this should be considered best.

The under drains formed by the furrow slices will not continue open, *long* after the cultivated crop sown on the clover lay is removed. Neither should they, for the cleaning out furrows will be found sufficient to carry off the superfluous moisture from these grasses; as they require much more of it than cultivated crops. Hence it is that dripping climates are considered the best for grass, and that crops of small grain, when sown in the fall, do not generally succeed well in such climates, unless proper provision be made to run off the excess of moisture.

Here I wish the reader to observe, that the level cultivation means nothing more or less, than that, after the crops have been planted, all ridging, hilling, or moulding up should cease.

The injury done by hilling, ridging, and moulding up plants is explained, as are also the advantages derived from a level and very superficial cultivation.

Hilling, ridging, and moulding up plants, must have originated in barbarism, or but a few removes from it; like the practice of planting fruit trees as though they were fence posts. The latter practice, however, has been abandoned by enlightened cultivators, and the former will share the same fate, when nature and reason are harmonized in the practice of husbandry. Hilling, ridging, and moulding up plants have been the too general practice of the world from time immemorial. It is, however, as much opposed to reason and observation, as it is to the economy of nature, and these ought to govern all our agricultural pursuits.

When the grounds have been properly prepared for planting, no possible good can arise from this inconsiderate practice; except when applied to celery, or other plants, which habit has rendered more palatable when blanched. The evils arising from it, however, are many and great: it compels the plants to form new sets of roots, so often as they happen to be ridged or hilled up. This is done at the expense of those already formed, as the roots of plants cease to perform their proper functions when buried too deep within the soil: thus the efforts of nature are diverted by the folly of man, to useless and very injurious purposes, instead of being applied to the growth and maturity of the crop.

If the soil be too thin and weak, or the habits of the plants too delicate to form repeated sets of roots readily, vegetation languishes still more, and the injury is greater. Hilling and ridging up plants, form furrows or gutters, exactly calculated to carry off the rains, and produce artificial droughts; yet so infatuating are long established practices, that the very obvious effects produced by them pass unregarded. Even sandy soils, which part with moisture too freely, under the best system of management that can be devised, are generally cultivated in this way. This very inconsiderate practice turns up the grass roots and dung, (if the latter has been applied,) and exposes them to the very injurious effects of the sun, wind, and rain: consequently scatters much of the nutriment in the air, which should be secured for the crops and improvement of the soil. Still we are told, that this is the proper way to "subdue the sod." This is not all, for the openings made by ridging up the plants, may be justly considered as main drains, communicating with innumerable avenues running in every direction through the ground, from which the moisture and confined air escape; and with them, the nutriment contained in the enriching matter buried in the soil. This checks fermentation and decomposition, and with them the exciting and nutritive principles arising therefrom. In fact, hilling and ridging up plants may be justly considered, as in direct opposition to nature and reason, and of consequence to good husbandry. Still it has remained in general practice, except where the intervals between the plants have been so limited, that man with all his ingenuity, could not devise means to effect the ruinous purpose, as in narrow drilled wheat, or turnips sown broad-cast, &c.

The level cultivation which has been recommended should be only sufficiently deep to extirpate weeds. The less the open, mellow, artificial bed prepared for the growth of the plants is disturbed, the better it is calculated to promote vegetation: also, to secure the riches contained in it for the following crops and the improvement of the soil. The skim, with a proper rake attached to the hinder part of it, will effect this purpose in very narrow intervals, and the hoe harrow, with the tined harrow following it, in wider, with much less labor than the common plough, except where stones, and stumps with superficial roots abound. There the shovel plough, (with a share but little more pointed than one-half of a circle,) should be introduced, until a better tool has been invented for this purpose.

The common plough cuts off, laps over, and mangles the roots of the plants in ridging them up. Although the soil is not diminished by this inconsiderate practice, the roots of the plants are confined in heaped up ridges. This compels them to take such unnatural directions that their prosperity is greatly abridged, particularly in narrow intervals, and in these the injury is most observable.

When this instrument is used for ploughing from and to plants, the roots on the sides of them next to the intervals are cut off. The gentlemen who recommended this practice must have seen its injurious effects by the paler complexion and very slow growth of the plants, until they recovered from the very manifest injury done to them by this truly barbarous operation.

If they had recommended the tops to be cut off at the same time, uniformity would have been better preserved, with the additional advantage that might be derived from a new set of tops as well as roots. The subject is really too ludicrous to be treated seriously. Still, gentlemen of great talents have recommended this practice: however, nature, reason, and practice united, clearly determine that the less plants are injured in the cultivation, the better: provided the cultivation be equally good; and it may be far better. Repeated ploughing and harrowing pulverize the soil, and leave it quite open and mellow. It, however, too soon, becomes compact, in consequence of the loss of the animal and vegetable matter exposed to useless waste by this injudicious practice, unless the soil be so rich as not to be materially affected by this very inconsiderate waste. Whereas, the fermentation of the animal and vegetable matter, when closely confined under the soil, will keep it continually open and mellow, for the ready admission of the roots of the plants.

We are told that cutting the roots increases the number of them, and that this multiplication of the roots greatly promotes the growth and prosperity of the plants. No question but that more branches will spring out from the stubs, after the roots have been cut off. It should, however, be recollected, that nature has formed the roots exactly to suit the economy of the plants, and that no possible good, but much evil, must arise from the ill judged attempts of man to improve the formation of them:

* See Low's directions for the best method.

† After very heavy rains, the plants standing in hollow parts of the field are sometimes very much injured, unless slight drains are formed by the hand hoe across the ridge where the water remains stagnant.

especially by mutilating them irregularly, as is done by the plough. The injury done by this practice is readily seen by the procrastination of the growth of the plants, until these new sets of roots are formed

I have carefully pruned, and too often ruggedly mutilated annual plants, by various injudicious systems of cultivation: but evil, instead of good, invariably followed, except when I removed the suckers growing near to the roots of their parent stem, and believe that even this operation should be very carefully performed, and while the suckers are very young.

Still, I do not question that the gentlemen who recommended ploughing from and to plants, grew good crops in that way. It should still, however, be remembered that talents, capital, and industry, have often done this, when a highly interesting part of the management has been excessively bad.

The usual mode of cultivation is not well calculated to subdue weeds. The seeds are as often turned down beyond the power of vegetation, as they are turned up. They are also buried underneath the heaped up ridges, and when the grounds are cultivated for the small grain, they are spread abroad. As this favors the vegetation of them, they often greatly injure the crops. These facts are best seen when the grounds have been manured for a fallow crop, with dung made by cattle fed on clover hay. In that case, the seeds buried under the ridges often produce as luxuriant crops of this grass as if they had been sown. This does not happen when a level cultivation has been properly executed. It turns up none of the seeds that are buried beyond the power of vegetation. They of course remain torpid, and as those near the surface vegetate, they are destroyed.

I have before observed, nothing but fire, or some cause that acts in the same powerful way, will destroy the vegetative powers of plants, as soon, or so effectually, as a well directed fermentation. Numerous instances of the powerful effects produced by this simple operation of nature, might be advanced. I have already mentioned some of them; but as it may lead the farmer to recollect others, and prevent the injury caused by them, I will briefly observe, that if a long spell of rainy weather takes place after grass has been mowed, and the swaths be not turned in due time, both the tops and the roots of the grasses covered by them are sadly injured, and sometimes effectually killed, by the fermentation occasioned by this covering alone. It also but too often happens, that both small grain and grass plants are greatly injured, or destroyed, by the still much lighter covering of the leaves blown on them from adjacent woods; when a boy or a girl with a rake, timely used, could have prevented the injury.

Now, if fermentation alone be capable of doing this, when but partially favored, certainly vastly more is to be expected from this powerful agent, when its whole force is brought into full effect. No question but this is done when plants are turned upside down, and the vegetation arising from them regularly cut off a little within the surface of the soil by the hoe harrow, also overturned and effectually mangled by the tined harrow following it. The wounds inflicted on them, together with the close covering of earth above them, greatly promote fermentation, and of course hasten their destruction.

The reason why this powerful agent has not been brought into general use, seems to be simply this; farmers have not seen, when the tops and roots of the grasses, or other enriching manure are buried under the soil, and a proper cultivation pursued, that fermentation more effectually expands, divides, and keeps the grounds open and mellow than can be effected with the plough. We might, however, have long since seen the impropriety of the usual mode of cultivation, merely by walking through these parts of our woods which still remained well set with timber, and other native vegetation. There we might observe that our feet sunk freely into a soil, which nature had kept covered with leaves, and so effectually cultivated through the medium of this simple covering by fermentation alone, that the grounds were kept more open and mellow than our best cultivated fields: also, that the depth of this open texture was in due proportion to the animal and vegetable matter contained in the soil underneath the covering of leaves. We might likewise have seen that nature did not cut, rend, or mangle either the tops or the roots of the plants, and by this means debilitate, and procrastinate the growth of them, nor form hills or mounds around, nor furrows or ditches between them, to run off the moisture necessary to their growth.

There can be no difficulty in altering the present mode of cultivation, so as to save the farm yard manure, also that arising from the roots of the grasses; and at the same time, preserve the roots of the plants from injury by a level cultivation, when fallow crops are grown, or grass or clover lays alone. As peas and beans are frequently sown broad cast, and good crops of them are obtained in that way, they will certainly yield much larger crops, when kept free from weeds by a level cultivation.

Starch.—To make starch from wheat, the grain is steeped in cold water until it becomes soft and yields a milky juice by pressure; it is then put into sacks of linen and pressed in a vat filled with cold water; the pressure should be continued as long as any milky juice exudes; the fluid gradually becomes clear, and a white powder subsides which is starch.

Elements of Practical Agriculture,

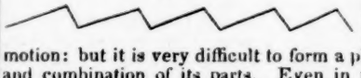
By David Low, Professor of Agriculture, &c.

SIMPLE OPERATIONS OF TILLAGE.—PLOUGHING.

In ploughing, it has been seen, a slice of earth is to be cut from the left-hand side, and to be turned over to the right-hand side. In this operation, the left-hand or near side horse walks on the ground not yet ploughed, the right-hand or off side horse walks in the furrow last made, and the workman follows holding the handles of the plough. By means of these handles he guides the plough, and he directs the animals of draught by the voice and the reins. When he is to turn the plough at the end of a ridge, or when it encounters an obstacle, as a large stone, he presses down the handles, so that the heel of the plough becomes a fulcrum and the share is raised out of the ground.

In ploughing, the instrument ought to be held vertical. If it is inclined to the left-hand side, the same work is performed in appearance, though not in reality; a portion of the ground below not being tilled at all, but left thus:—

Fig. 1.



The plough is of the most perfect form, when its various parts are so adjusted that they shall not oppose each other's motion: but it is very difficult to form a plough that is perfect in the form and combination of its parts. Even in those of the best construction, there is frequently found to be a tendency to rise out of the ground or to turn to one side, generally the right-hand or open side. The tendency to rise out of the ground can be corrected by giving an inclination downwards to the point of the share; and the tendency to turn to the open or right-hand side, can be corrected by turning the point of the share slightly to the left hand side. By these means, however, the labor of draught is increased, and care must therefore be taken that this tempering of the irons, as it is frequently called, be not in any case carried further than is necessary to correct the defects of the instrument. All that is necessary beyond this is effected by changing the position of the line of draught by means of the bridle on the beam.

With regard to the depth to be ploughed, this, we shall see in the sequel, depends upon the kind of crop to be cultivated, and other circumstances. It has been shown that a furrow-slice of ten inches in width requires a depth of seven inches: that is, a depth of about two-thirds of the width, in order that it may lie at an angle of 45°. But although it is necessary to proceed upon this principle in forming a plough, we cannot regulate the depth to the width in this manner in practice. It is not necessary that the depth should be to the width in the proportion of two to three, or that the sod should lie precisely at the angle of 45°. In the field all that can be arrived at is a kind of approximation to the true proportions. When the sods are considerably too wide in proportion to their depth, the ploughman will be admonished of this by their lying too flat, and too slightly overlapping each other. When their depth is considerably too great in proportion to their width, they will stand too upright, and be apt to fall back again into the furrow.

The medium depth of good ploughing may be held to be seven inches. When circumstances, as the kind of crop and the nature of the soil, do not require deep ploughing, the depth may be less: but it will be considerably more in those cases to be afterwards adverted to, where deep ploughing is from any cause expedient.

In the moist climate of this country, and indeed in most others of Europe, it is necessary to form the ground into what are termed ridges, so as to admit of the water which falls upon the surface finding a ready egress. And even in lands so dry that little injury will result from stagnating water, such ridges are generally formed on account of their convenience in the different works of tillage.

The first operation in the forming of ridges is *striking the furrows.*

Let it be supposed that a field has been laid level by previous ploughings, and that the marks of former ridges being obliterated, the lines of the new ones are to be laid out. The usual breadth of ridges is from 15 to 18 feet, and sometimes more. We may assume in the following descriptions 15 feet to be the width of the ridges.

Let a steady ploughman be furnished with three or more poles of wood, shod with iron, eight or nine feet in length, and divided into feet and half feet. The first operation is to mark off at two sides of the field what is termed a head-land. This is merely, a ridge formed parellel to the side of the field, on which the horses are to turn, to afford sufficient space for which, these ridges may be 18 feet wide. The lines of them are marked off before the other ridges, in order that the ploughman may know, on arriving at the end of the ridge, when to turn his horses. After the rest of the field is ploughed, the headlands themselves are ploughed and formed into ridges.

In the following diagram, representing a field, let EF, GH, represent the lines of the head-lands, drawn parallel to AB and CD, the sides or boundaries of the field, and at the distance from each of these sides of 18

feet. These lines the ploughman marks out, by running a straight furrow with his plough parallel to the two sides.

Let him now, beginning at the side of the field, AD, parellel to which it is intended to run the ridges, measure off with his pole E*a*, 7½ feet At the point *a* let him place one of his poles. This is the point at which he is to *enter* his plough. But, leaving his horses in the mean time, let him walk on to a convenient distance, as to I, and there, in like manner measuring off 1*b*, 7½ feet, let him set up his second pole at *b*, and then, at the further end of the field, on the line of the head-land, at *c*, let him place his third pole. He has now three poles placed in a line; but if from the length of the field or inequalities of the surface, more than three poles are necessary, more must be used, as there must be so many poles in sight as that the ploughman may be enabled to direct his plough by means of them in a straight line. He now returns to his plough and enters it at the first pole at *a*, keeping the other two poles in a line, so that he may be enabled to plough directly towards them. Having entered his plough at *a*, he stops his horses and measures off 15 feet to *d*, where he plants the pole. He then returns to his plough, which is standing at *a*, and drives his horses, keeping the two poles before him as a guide, to the second pole *b*. Having done this, and leaving his plough standing at *b*, he measures off from *b* to *e*, 15 feet, and there he plants his pole. He then returns to his plough, and proceeds forward, making his furrow in a straight line to the last pole *c*, where in like manner, he stops his horses, and, measuring off 15 feet, he plants his pole at *f*.

In this manner he has placed his poles in a straight line, at the distance of 15 feet from their last position, and parallel, as before, to the line of fence. He now turns his horses sharp about, and returns by the furrow which he has just drawn *cba*. By this second ploughing he throws the earth out in an opposite direction, so that he has formed a completely open furrow. In returning, he takes care to correct any inequality or crookedness that may have taken place through the unsteady motion of the horses in his first track.

The poles being now placed in a line, *def*, he brings his plough to *d*, enters it, and stops it there. He measures off 15 ft. with his pole from *d* to *g*, and fixes his pole at *g*; and then he proceeds with his plough to *e*, and *f*, repeating the same operation with his poles as before, and returning by the track of his last-made furrow from *f* to *d*. In this manner he proceeds throughout the whole field forming parallel open furrows, at the distance from each other of 15 feet. These furrows are to form the *centres* of the future ridges.

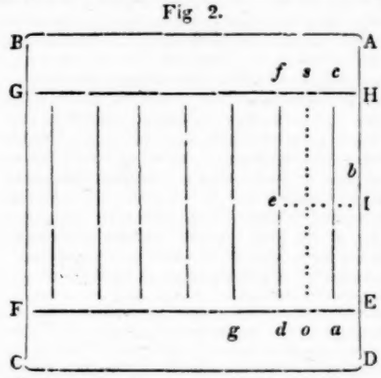
The field is now prepared for being ploughed into ridges, and the manner of doing so is this:—

The ploughman, beginning at the left-hand side of the open furrow, ploughs his first furrow-slice towards it. He then, returning by the opposite side performs the same operation, causing the two first furrow-slices to rest upon each other.

Thus, in forming his first ridge, he begins at the side of *a*, and ploughing in the direction from *a* to *c*, he turns his first furrow-slice into the open furrow *ac*. When he arrives at *c*, he turns his plough right about, and returning from *c* to *a*, he lays his second furrow-slice upon the first one, as at C, figure 3.

In this manner he continues always turning to the right-hand side, and laying his furrow-slices towards the centre of the ridge, until he has reached the boundary of the ridge EH, on the one side, and the line *os*, halfway between *ca* and *df* on the other. He has thus formed a ridge, of which *ca* is the crown or centre, and HE and *os* the termination. By proceeding in this manner throughout the field, the whole is formed into ridges, of which the first marked furrows are the centres.

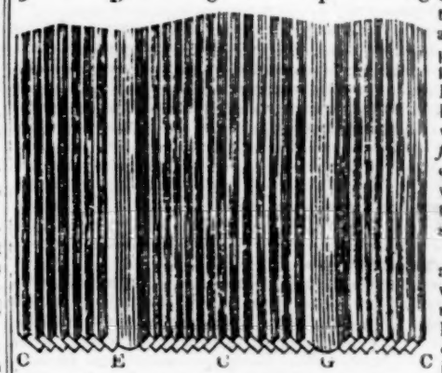
Fig 2.



It has been said that the ploughman continues turning his horses to the right, and that thus, after having proceeded from *a* to *c*, he returns from *c* to *a*, and so on, always ploughing round *ac* as a central line. When, however, he has proceeded from *a* to *c*, he may turn his horses left about and return from *f* to *d* and so on, always laying his furrow-slices towards *ac* and *fd* respectively. In this manner he will have ploughed the half of two adjoining ridges, and terminated at the space *os*, half way between them. This method of ploughing, it will appear, has the same effect as turning the horses right about, and is the most frequent and convenient in practice.

In the following figure, in which CC, CC, CC, are the centres of the ridges, the manner in which the successive furrow-slices have been laid upon each other is shown.

Fig. 3.



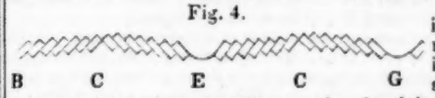
By this laying of the earth towards the centres, the ridges acquire a certain curvature. By ploughing the earth away from the intervals DE, FG, the ground is hollowed at these parts, which now form the *open furrows*. It is by these open furrows that the water which falls upon the surface finds a passage.

A certain, though not a great, degree of curvature, is given to the ridge by this ploughing. It is frequently, however, necessary to give it a yet greater degree of curvature and elevation. This is done by ploughing the whole ridge a second time, and in a similar manner.

The plough is first driven along the centre of the ridge from C to C, forming an open furrow. Successive furrow-slices are then laid towards this furrow, in the same manner as in the previous ploughing. This is done with the successive furrow-slices, until the plough reaches the open furrows, DE, FG. In this manner the whole ridge is ploughed, and an increased elevation and curvature given to it. The operation is termed *gathering*.

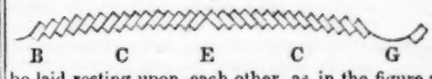
In performing the operation of gathering, it is important that the ridge be formed with a uniform curvature, so that it shall not have what is technically termed a shoulder, or hollow part on each side of the crown It is to prevent this defect that the open track is made along the crown before the first two slices are laid together; by which means the ploughman is better enabled to lay them upon each other in such a manner that they shall not overlap and form a protuberance at the crown of the ridge. A transverse section of the ridges, when gathered will appear thus:

Fig. 4.



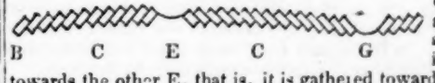
A ridge, however, being already formed, it may be wished to plough it again, and yet to preserve it at the same curvature and elevation. In this case, the plough is to enter at the open furrow, and to lay the successive furrow slices towards it, until the two adjoining ridges are ploughed By this means all the slices of the same ridge lie in the same direction, and the curvature and elevation of the whole remain as before. This operation is termed *casting*, and the manner in which the furrow-slices rest upon each other, will appear in the following figure:

Fig. 5.



In the operation of casting, two methods may be pursued. The two first furrow-slices, as those at E, &c. may be laid resting upon each other, as in the figure above, in which case the two ridges will be formed as it were into one large ridge; or else the open furrow at E may be preserved by keeping the two first furrow-slices at a little distance from each other, and preserving the space between them, thus:

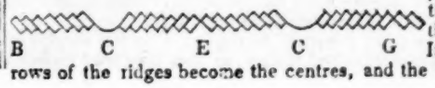
Fig. 6.



When land is ploughed in this manner, the ground is taken from one side of each two adjoining ridges at G, and laid towards the other E, that is, it is gathered towards one side and gathered from the other. In this manner the ground at the open furrows G, from which we gather, becomes more bare of earth than the open furrow E, towards which we gather This is an imperfection unavoidable in casting a ridge. When, therefore, we wish to cast a ridge twice in succession, we reverse the former mode of ploughing; we gather towards the open furrow G, and from the open furrow E, and thus the ridge is restored to its former state.

Another method of ploughing is *cleaving*. In this case, the plough commences at the open furrow, lays the first slice towards it, and then returning by the other side of the open furrow, lays the second slice upon the first, as in the following figure. When it has reached the centre, it stops and begins with another pair of ridges, and ploughs the half of each pair together in the same manner. In this way the open furrows of the ridges become the centres, and the former centres become

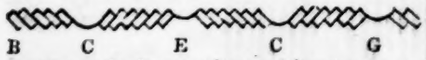
Fig. 7.



the open furrows. The operation of cleaving is of constant occurrence in the summer fallow and other cleaning processes of tillage. When we wish to level a ridge, we cleave it.

There are two variations to be noted in the practice of cleaving. Either the two first slices are laid close together, in which case the open furrows of the former ridges become the centres, and the former centres the open furrows, in the manner shown in the last figure; or a certain distance is kept between the two first slices, and so the open furrow is preserved. In this case, each ridge is split into two ridges, and the number of open furrows is doubled, thus:

Fig. 8.

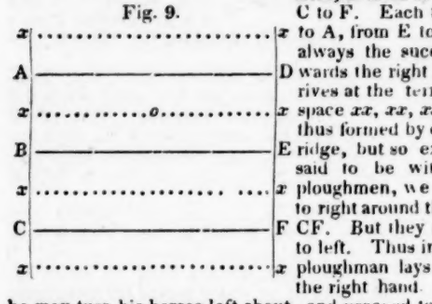


B C E C G

The next method of ploughing, is *cross-ploughing*. This, as the name denotes is ploughing in a direction crossing that of the former ridges and furrows.

In cross-ploughing, the workmen place themselves at equal distances from each other, as thirty or forty yards, at the side of the field at which they are to begin to plough. Each then runs a straight furrow across the field, as from A to D, from B to E, from C to F. Each then returns as from D to A, from E to B, from F to C, laying always the successive furrow-slices towards the right hand, until each man arrives at the termination of his allotted space *xx, xx, xx, xx*. There has been thus formed by each workman one great ridge, but so extended that it may be said to be without curvature. The ploughmen, we perceive, turn from left to right around the first furrows AD, BE, CF. But they may also turn from right to left. Thus in going from B to E, the ploughman lays his first furrow-slice to the right hand. When he arrives at E, he may turn his horses left about, and proceed to D, and returning from D to A, lay his first furrow slice to the right hand towards DA. Turning left about then at A, he proceeds in the direction BE, and so on, always turning left about until he has arrived at the middle space *o*, when the whole space between AD and BE will have been ploughed.

Fig. 9.



Sometimes, for convenience and the saving of distance, he may plough in the first place round the central line BE, by turning from left to right and then plough the remainder of the interval by turning from right to left.

These are matters of detail somewhat difficult perhaps to be described clearly, but so simple in themselves that they need only be seen in the field to be thoroughly understood.

The first operation, we have seen, is striking the furrows previous to forming the ridges. This is done by laying off, by means of furrows, first the lines of the head-lands, and then the parallel lines corresponding to the future centres of the ridges to be formed.

The next operation is forming the ridges. This is done by beginning at the centre, and ploughing towards it till each ridge is formed.

When ridges are formed they may be subsequently ploughed in different ways.

First. They may be gathered; in which case, beginning at the crown, the ridge is ploughed, and an increased elevation given to it.

Second. They may be cast; in which case two ridges are ploughed together, and either formed into one large ridge, or, by keeping the open furrows clear, retained in two ridges.

Third. They may be cloven; in which case, beginning at the open furrows, the half of each adjoining ridge is laid together. The first two furrow-slices may either be laid close together, or the open furrow may be kept clear between them. In the first case, each ridge will have been so cloven as that the open furrow shall have become the crown, and the crown the open furrow. In the second case, each ridge will have been cloven into two, and the number of ridges and open furrows doubled.

In the original laying out of the ridges, the lines have been described as running straight through the field; but it is frequently expedient, on account of the inequalities of the surface or other cause, to change the direction of the ridges at some part of the field, so as to facilitate the discharge of the water.

The application to this case of the principle of striking the furrows is easy. The ploughman makes a furrow where the change of direction is to take place, straight or curved as circumstances may require. The one set of ridges terminate at this part, and the other are laid off from it in the new direction to be given. The ploughman, by means of his poles, as before, strikes his first set of furrows terminating them at the furrow where the change of direction is to take place. From this furrow he strikes his second set of furrows, in the direction in which they are to run. The part where the opposite sets of furrows meet may be made an open furrow or a raised up ridge or head-land, as circumstances may require.

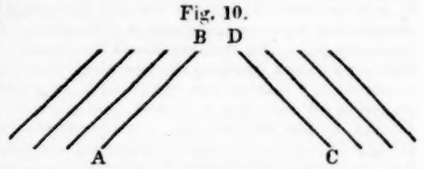
The direction of ridges must generally be regulated by the sloping of the fields, and the lying of ditches and fences, so that they may promote the main purpose for which they are formed, the carrying off of surface water. But, other circumstances being alike, they should be made to lie as much as possible north and south, and as rarely as possible east and west: for, in the latter case, when the ridges are much elevated, the north side has a somewhat less favorable exposure than the south side.

Sometimes ridges are altogether dispensed with, either when the land is very dry, or when it is wished to keep it in grass and give it the aspect of a park or lawn. In this case, the ploughs may either follow each other round the entire field, and terminate at the centre, or they may plough in large divisions, as in the case of cross-ploughing.

In ploughing very steep land, it is frequently laid in ridges diagonally across the slope, for the purpose of rendering the labor more easy, and of lessening the danger of torrents carrying away the surface.

The precaution to be observed in this case, is to make the ridges slope upwards from the right hand, as from A to B in the following figure, and not to the left hand, as from C to D. For in the first case, when the laboring cattle are ascending the steep the plough is throwing the furrow-slice down hill; whereas, in the other case, when the cattle are ascending, they are raising the furrow-slice up hill, by which their labor is greatly increased.

Fig. 10.



Besides the open furrows of the ridges, which act as channels for carrying off the water, it is necessary, where there are hollow places where water may stagnate, to form open furrows or channels. This is done by drawing a furrow with the plough in the direction most convenient for the purpose. A workman then follow with the spade or shovel, and carefully opens all intersections with other furrows, so that there may be a free communication between them.

Sometimes it is necessary that the furrow made by the plough be further deepened by the spade, so as to form a channel sufficiently large; and wherever head-lands intercept the run of water, channels must be cut through them to the ditch or outlet, so that none may stagnate upon the ground. Attention to these details in practice is essential in all cases of tillage; and it manifests a want of skill and industrious habits in a farmer to suffer his lands to be injured by the stagnating upon it of surface water.

Miscellaneous.

PLEASURES AND PROFITS OF AGRICULTURE.

(Continued from page 61.)

The prejudices of farmers against all innovation upon their established habits are as old as agriculture itself. In the dark ages of superstition, a man who by any improved method contrived to grow larger crops than his fellows, was supposed to use supernatural means; and if he escaped prosecution as a wizzard, was at least shrewdly suspected of dealings with a power whom his more pious neighbors carefully avoided. On the introduction of hops into this country, the city of London petitioned against their use, lest they should injure the beer; and with equal wisdom the Kentish farmers, whose land was overrun with coppice, and who are now so largely benefitted by their cultivation, objected to their growth "because they occasioned a spoile of wood for poles." New implements have been opposed upon much the same principle as the objection made about a century ago in Scotland, and so humorously as well as truly related by Sir Walter Scott, to the use of the winnowing machine;* and at this hour, the farmers in a large midland county assigns as a reason for making the hinder wheels of their waggons preposterously larger than the fore, 'that it places the body on a level in going up hill;' never reflecting, that it will have to come down again, or to move upon even ground.

Among numberless instances of a similar nature, it is told, that the late Duke of Bedford,—who, in his well-known zeal for the promotion of every agricultural improvement, took great pains to introduce the Norfolk manner of ploughing, with two horses abreast,—observing, while riding in the neighborhood of Woburn, one of his tenants at work, on that sandy soil, in the old-fashioned mode, with four at length, his Grace dismounted, yoked two of the horses together, and held the plough himself, explaining at the same time the advantages of the new method; but his disappointment may be imagined, when the man, instead of being at all convinced by his reasoning, replied, 'that such a plan might answer with his Grace,

* "Your leddyship and the steward hae been pleased to propose, that my son Cuddie suld work in the barn wi' a new fangled machine for dighting the corn frae the chaff, thus impiously thwarting the will of Divine Providence, by raising wind for your leddyship's ain particular use by human airt, instead of soliciting it by prayer, or waiting patiently for whatever dispensation of wind Providence was pleased to send upon the sheeling-hill.—*Tales of my Landlord, Old Mortality*, chap. vii. It was introduced in the year 1710, from Holland, by Fletcher of Saltoun, and its use was publicly denounced from the pulpit, as impious.

but was *too expensive* for him!' To which it may be added, that, notwithstanding the obvious economy and handiness of this mode of ploughing all light soils, and that, on such land, it has been adopted on every gentleman's farm throughout the kingdom, yet, with this example before the farmers' eyes, it has not yet entirely superseded the ancient cumbersome and expensive team.

Even in the settled and customary management of a farm, unforeseen difficulties occur that baffle experience; and in some cases, the merely practical farmer, who relies solely upon that, will be at a loss for expedients which an acquaintance with the practice of others might enable him to supply. There is, in this respect, assuredly much to learn, and no great difficulty in the task. For the rising generation, a more enlarged system of education is obviously the surest means, but the farmer who has not had that advantage, may easily acquire a practical knowledge of the various modes of culture and of rearing stock pursued in other districts, by occasionally visiting them after seed time, and adopting Bakewell's advice—'*to see what others are doing.*' He will thus be enabled to compare, in the most effectual manner, their different fashions with his own; and it is in this manner, that the intelligent farmers of the North—of Northumberland and of Norfolk, have surpassed their bretheren in active enterprise and improved husbandry.

There is an old and an often-repeated adage, that—

'He who by the plough would thrive,
Himself must either hold, or drive.'

and this, which has become a prevalent opinion, has deterred many a man who has sought relief from the cares of trade in the retirement of the country from availing himself of the the profit, as well as the amusement, which he might have derived from farming. It is unquestionably true, that the man who, from early habit, is capable of holding the plough, must have great advantage in the practical knowledge of that most important operation, over him who has not himself stood between the stilts, and it is earnestly to be recommended, that every youth who is destined to a farming life should personally assist in all the labors of the field, as the surest means of enabling him to direct them hereafter with effect; but nothing can be more erroneous than the supposition that the continuance of the toil is necessary to success. Formerly, indeed, when husbandry was confined to one dull round of drudgery, and when farms were generally so small, that the profit depended as much upon the personal labor as the capacity of the tenant, it might be true: but since the introduction of the present improved modes of cultivation, the more systematic attention to live stock, and the enlarged size of farms; since in fact, agriculture has become a science, rather than a mere mechanic art, the time of a man who occupies sufficient land to employ only a few laborers, would be ill bestowed on manual toil. The axiom is not, indeed always applied in its literal sense; but then it is construed to mean, that no man can hope to become a good farmer, who has not been bred to the business. Undoubtedly personal experience is necessary· but it may be acquired at much less expense of time and money than is commonly imagined, by any man who will sedulously devote his powers of reflection to the principles, and his attention to the details of farming operations, with a firm resolution neithen to relax in his exertions, nor to suffer himself to be daunted by disappointment in the commencement of his career. Such a man will be sure to succeed; and, as encouragement to perseverance, he may bear in mind, that many of the most eminent agriculturists, and those who have introduced the most important improvements in rural economy, were not originally farmers.

Both the late Arthur Young, and Marshall, whose writings have contributed so much to the diffusion of agricultural knowledge, were brought up to commerce; and it was not until the latter had attained to a mature period of life, that he turned his attention to the plough. He then, with little other previous preparation than what he had acquired from reading, entered upon a farm within ten miles of London, of three hundred acres of mixed soil, and which had been greatly mismanaged. This, for one so unpractised, was an arduous undertaking; yet within three months he discharged his bailiff, and became his own manager. The consequence, as might be expected, was, that he at first committed some blunders; but at the end of three years, he published his '*Minutes of Agriculture,*' containing the memoranda of his operations from 1774 to 1777, which although not free from error, yet show, that he had even then attained to a greater proficiency than most of his cotemporaries: but, to use his own language, '*attendance and attention will make any man a farmer.*'

The notion that farming is unprofitable to any other than 'regular-bred farmers,' has been strengthened by numerous examples of persons who embarked in it during the late war, without any previous experience, or any other incentive than an expectation, encouraged by the high prices of the day and the exaggerated representations of some agricultural writers, that it would prove an advantageous speculation. Impressed with that idea, they gave exorbitant rents for land: their stock was purchased at an equally extravagant rate; and when the markets declined, they incurred enormous loss. The publication on the agricultural state of the kingdom in 1816, drawn up from the replies to a circular letter on the subject by the Board of Agriculture, teems with accounts of farms thrown up in every county; and, in many cases, the stock and crops were sold at less than half their original cost,

To these instances are to be added those, constantly recurring, of men in easy circumstances, who, without any knowledge of either the theory or practice of husbandry, engage in it merely for amusement, and not condescending to stoop to the details, are exposed to numberless impositions of their tradesmen and servants. They pay higher wages, and obtain lower prices, than their neighbors; they grow large crops, but at an expense that the sale will not repay; and, retiring at length in disgust, they declare farming to be 'a losing concern;' but without acknowledging that it only became so through their own improvidence.

That such failures, however, do not always occur, we have the evidence of a very competent judge, who, alluding to persons who, having been in other lines of business, yet, having a strong inclination for rural occupation, had betaken themselves to farming as a profession, says,—'this class forms the most intelligent and accurate of husbandmen. Like converts in religion, they have more zeal, give more application, in short, have fewer prejudices to surmount, and more enthusiasm for their new profession, than those who have been brought up in it from their infancy. They are, however, at the first outset, more liable to error or mistake, from the want of practice; but their indefatigable attention makes more than amends for their ignorance of the minutiæ of the art; and as they have been at some pains to acquire a knowledge in the theory of agriculture, and hence established their ideas on rational principles, they most commonly in the end make a distinguished appearance, as their labors, if judiciously performed, though often in a new and experimental channel, seldom fail of being crowned with success.'

Thus, in every country, the condition of the people is seen to depend upon the degree of skilful labor which it can command: but the plough is the prime mover of all, for until a sufficiency of food be produced for the common consumption, no one can be spared from the cultivation of the land; and it is obvious, that in proportion to the perfection of that cultivation will be the amount of subsistence obtained, and the number of spare hands left for other purposes. The means of support in other branches of industry being thus secured, the demand for the produce of the land increases along with the produce of that labor; more hands are then required for its cultivation, and these again require more manufactures. Thus industry and wealth keep pace with agriculture, and, each stimulating the other, contribute to the national prosperity. That such is the effect of agriculture on the welfare of the community, is proved by the history of its progressive improvement, and of the consequent change in the mode of living.—*Introduction to British Husbandry.*

Young Men's Department.

Beneficial Effects of Knowledge on Moral Principle and Conduct.

Knowledge is valuable chiefly in proportion as it is practical and useful. It dispels the darkness which naturally broods over the human understanding, and dissipates a thousand superstitious notions and idle terrors by which it has been frequently held in cruel bondage It invigorates and expands the intellectual faculties, and directs them to their proper objects. It elevates the mind in the scale of rational existence, by enlarging its views and refining its pleasures. It gratifies the desire of the soul for perpetual activity, and renders its activities subservient to the embellishment of life and the improvement of society. It unveils the beauties and sublimities of nature, with which the heavens and the earth are adorned, and sets before us the "Book of God," in which we may trace the lineaments of his character and the ways of his providence. It aggrandizes our ideas of the omnipotence of Diety, and unfolds to us the riches of his beneficence, and the depth of his wisdom and intelligence. And, in the exercise of our powers on such objects, we experience a thousand delightful emotions and enjoyments to which the unenlightened multitude are entire strangers. All such activities and enjoyments may be reckoned among the practical advantages of knowledge.

But there is no application of knowledge more interesting and important than its practical bearings on moral principle and action. If it were not calculated to produce a beneficial effect on the state of morals and the intercourses of general society, the utility of its general diffusion might, with some show of reason, be called in question. But there cannot be the slightest doubt, that an increase of knowledge would be productive of an increase of moral order and an improvement in moral conduct. For truth, *in thought and sentiment*, leads to truth *in action*. The man who is in the habit of investigating truth, and who rejoices in it when ascertained, cannot be indifferent to its application to conduct. There must be truth in his actions; they must be the expression, the proof, and the effect of his sentiments and affections, in order that he may approve of them, and be satisfied that they are *virtuous*, or accordant with the relations which subsist among moral agents. There must likewise be a truth or harmony between his actions, so that none of them be incoherent with the rest. They must all be performed on the same principles, with the same designs, and by the same rule. To a man who perceives truth and loves it, every incongruity and every want of consistency between sentiment and action,

produces a disagreeable and painful sensation; and, consequently, he who clearly perceives the rule of right, and acts in direct opposition to it, does violence to his nature, and must be subjected to feelings and remorses of conscience far more painful than those of the man whose mind is shrouded in ignorance. It is true, indeed, that proficiency in knowledge and in the practice of true morality, do not always proceed with equal pace. But it is nevertheless true, that every action that is truly virtuous is founded on knowledge, and is the result of scrutiny and choice directed by truth; otherwise what is termed virtue would be only the effect of necessity, of constraint, or of mechanical habits. We need not, therefore, fear that the dominion of virtue* will be contracted, or her influence diminished, by an enlargement of the kingdom of light and knowledge. They are inseparably connected, their empire is one and the same, and the *true* votaries of the one will also be the true votaries of the other. And, therefore, every one that sincerely loves mankind, and desires their moral improvement, will diffuse light around him as extensively as he can, without the least fear of its ultimate consequences; since he knows for certain, that in all cases whatever wisdom excels folly, and light is better than darkness. The following observations will perhaps tend more particularly to confirm and elucidate these positions:

1. *Ignorance is one principal cause* of the want of virtue, and *of the immoralities which abounds in the world.* Were we to take a survey of the moral state of the world, as delineated in the history of nations, or as depicted by modern voyagers and travellers, we should find abundant illustration of the truth of this remark. We should find, in almost every instance, that ignorance of the character of the true God, and false conceptions of the nature of the worship and service he requires, have led, not only to the most obscene practices and immoral abominations, but to the perpetration of the most horrid cruelties. We have only to turn our eyes to Hindostan, to Tartary, Dahomy, Benin, Ashantee, and other petty states in Africa: to New-Zealand, the Marquesas, the Sandwich Islands, and to the Society Isles in the Southern Pacific, prior to their late moral transformation, in order to be convinced of this melancholy truth. The destruction of new-born infants,—the burning of living women upon the dead bodies of their husbands,—the drowning of aged parents,—the offering of human victims in sacrifice,—the torturing to death of prisoners taken in battle—the murder of infants, and the obscene abominations of the societies of *Arreoy* in *Otaheite* and other islands, and the dreadful effects of ambition, treachery, and revenge which so frequently accompany such practices, are only a few specimens of the consequences of ignorance combined with human depravity. It is likewise to ignorance chiefly that the vices of the ancient pagan world are to be attributed. To this cause the apostle of the gentiles ascribes the immoralities of the heathen nations. "The gentiles," says Paul, "having the understanding darkened through the ignorance that is in them, have given themselves over unto lasciviousness, to work all manner of uncleanness with greediness." Ephes. iv. 18, 19. And, in another part of his writings, he declares, "Because they did not like to retain God in their knowledge, they were given up to a reprobate mind," or a mind *void of judgment;* and the consequence was, "they were filled with all unrighteousness, fornication, wickedness, coveteousness, maliciousness, envy, murder, deceit, and malignity;" they were "backbiters, haters of God, proud, boasters, inventors of evil things, disobedient to parents, without understanding, without natural affection, implacable, and unmerciful." Rom. i. 28-31. And if we turn our eyes to the state of society around us, we shall find that the same cause has produced the same effects. Among what class do we find sobriety, temperance, rectitude of conduct, honesty, active beneficence, and abstinence from the grosser vices most frequently to prevail? Is it among ignorant and grovelling minds? Is it not among the wise and intelligent, those who have been properly instructed in their duty, and in the principles of moral action? And who are those that are found most frequently engaged in fighting, brawling, and debauchery, in the commission of theft and other petty crimes, and in rioting in low houses of dissipation? Are they not, for the most part, the rude, the ignorant, and untutored,—those whose instruction has been neglected by their parents or guardians, or whose wayward tempers have led them to turn a deaf ear to the reproofs of wisdom? From all the investigations which of late have been made into the state of immorality and crime, it is found, that gross ignorance, and its necessary concomitant, grovelling affections, are the general characteristics of those who are engaged in criminal pursuits, and most deeply sunk in vicious indulgence. Now, if it be a fact that ignorance is one principal source of immorality and crime, it appears a natural and necessary inference, that the general diffusion of knowledge would tend to counteract its influence and operations. For when we remove the *cause* of any evil, we, of course, prevent the *effects*; and not only so, but at the same time bring into operation all those virtues which knowledge has a tendency to produce.

2. Knowledge is requisite for ascertaining the true principles of moral action, and the duties we ought to perform. Numerous are the treatises which have been written, and various the opinions which have been entertained, both in ancient and modern times, respecting the foundation of virtue and the rules of human conduct. And were we to investigate the different theories which have been formed on this subject, to weigh the arguments which have been brought forward in support of each hypothesis, and to balance the various conflicting opinions which different philosophers have maintained, a considerable portion of human life would be wasted before we arrived at any satisfactory conclusions. But if we take the system of revelation for our guide in the science of morals, we shall be enabled to arrive, by a short process at the most important and satisfactory results. We shall find, that, after all the theories which have been proposed, and the systems which have been reared by ethical philosophers, the Supreme Lawgiver has comprised the essence of true morality under two commands, or fundamental principles, "Thou shalt love the Lord thy God with all thy heart," and "Thou shalt love thy neighbor as thyself." On these two commandments rests the whole duty of man.

Now, although the leading ideas contained in these commands are simple and obvious to every one who considers them attentively, yet it requires certain habits of reflection and a considerable portion of knowledge to be enabled to trace these laws or principles to all their legitimate consequences, and to follow them in all their ramifications, and in their bearings on human conduct, and on the actions of all moral intelligences. For it can easily be shown, that these laws are so comprehensive as to reach every possible moral action, to prevent every moral evil, and to secure the happiness of every moral agent,—that all the duties inculcated in the Bible, which we owe to God, to our fellow-creatures, and to ourselves, are comprehended in them, and are only so many ramifications of these general and fundamental principles,—that they are equally adapted to men on earth and to angels in heaven; that their control extends to the inhabitants of all worlds; that they form the basis of the order and happiness of the whole intelligent system; and that their authority and influence will extend, not only through all the revolutions of time, but through all the ages of eternity. Here, then, we have a subject calculated to exercise the highest powers of intelligence; and the more we investigate it the more shall we admire the comprehensive nature of that "law which is exceeding broad," and the more shall we be disposed to comply with its divine requisitions. But unless we be, in some measure, acquainted with the first principles of moral action, and their numerous bearings upon life and conduct, we cannot expect to make rapid advances in the path of virtue, or to reach the sublimer heights of moral improvement.

3. Knowledge, combined with habits of thinking, would lead to inquiries into the *reasons* of those moral laws which the Creator has promulgated, and the *foundations* on which they rest. It is an opinion which very generally prevails, even among the more respectable portion of mankind, that the moral laws given forth to men are the *mere dictates of Sovereignty*, and depend solely on the *will* of the Deity, and consequently, that they might be modified, or even entirely superseded, were it the pleasure of the Supreme Legislature to alter them or to suspend their authority. But this is a most absurd and dangerous position. It would take away from the *inherent excellence* of virtue, and would represent the Divine Being as acting on principles similar to those of an Eastern despot. If such a position were true, it would follow, that all the immoralities, cruelties, oppressions, wars, and butcheries, that have taken place in the world, are equally excellent and amiable as truth, justice, virtue, and benevolence, and that the character of infernal fiends is just as lovely and praiseworthy as that of angels and archangels, *provided that Deity willed that such a change should take place.* Were such a change possible, it would not only overturn all the notions we are accustomed to entertain respecting the moral attributes of God, but might ultimately destroy our hopes of future enjoyment, and endanger the happiness of the whole moral universe. But there is an inherent excellence in moral virtue, and the Deity has willed it to exist, because it is essential to the happiness and order of the intelligent system. It might be shown, that not only the two fundamental principles of religion and morality stated above, but all the moral precepts which flow from them, are founded on the nature of God, and on the relations which subsist among intelligent agents, and that, were they reversed, or their influence suspended, misery would reign uncontrolled through the universe, and in the course of ages the whole moral and intelligent system would be annihilated.*

Now, if men were accustomed to investigate the foundations of morality, and the reasons of those moral precepts which are laid before them as the rule of their conduct, they would perceive a most powerful motive to universal obedience. They would plainly see, that all the laws of God are calculated to secure the happiness of every moral agent who yields obedience to them,—that it is their *interest* to yield a voluntary submission to these laws,—and that *misery*, both here and hereafter, is the certain and *necessary* consequence of their violation. It is a common feel-

* By *virtue*, in this place, and wherever the term occurs, I understand, conduct regulated by the law of God, including both the external action and the *principle* whence it flows; in other words, Christian morality or, that *holiness* which the Scripture enjoins.

* For a full illustration of these positions, and a variety of topics connected with them, the author begs to refer his readers to a work which he lately published, entitled "The Philosophy of Religion, or an Illustration of the Moral Laws of the Universe."

ing with a considerable portion of mankind, though seldom expressed in words, that the laws of heaven are too strict and unbending,—that they interfere with what they consider their pleasures and enjoyments, and that if one or more of them could be a little modified or relaxed, they would have no objections to attempt a compliance with the rest. But such feelings and sentiments are altogether preposterous and absurd. It would be inconsistent, not only with the rectitude, but with the *benevolence*, of The Deity, to set aside or to relax a single requisition of that law which is "*perfect*," and which, as it now stands, is calculated to promote the happiness of all worlds. Were he to do so, and to permit moral agents to act accordingly, it would be nothing less than to shut up the path of happiness, and to open the flood-gates of misery upon the intelligent universe. Hence we are told by Him who came to fulfil the law, that sooner may "heaven and earth pass away," or the whole frame of nature be dissolved, than that "one jot or one tittle can pass from this law." For, as it is founded on the nature of God, and on the relations which subsist between Him and created beings, it must be absolutely perfect, and of eternal obligation; and, consequently, nothing could be taken from it without destroying its perfection, nor any thing added to it without supposing that it was originally imperfect. Were the bulk of mankind, therefore, capable of entering into the spirit of such investigations, and qualified to perceive the true foundations of moral actions; were they, for example, clearly to perceive that *truth* is the bond of society, and the foundation of all delightful intercourse among intelligent beings in every world, and that, were the law which enjoins it to be reversed, and rational creatures to act accordingly, all confidence would be completely destroyed,—the inhabitants of all worlds thrown into a state of universal anarchy, and creation transformed into a chaos,—such views and sentiments could not fail of producing a powerful and beneficial influence on the state of morals, and a profound reverence and respect for that law "which is holy, just, and good."

4. Knowledge, in combination with habits of reflection, *would lead to self-examination and self-inspection*. The indolent and untutored mind shuns all exertions of its intellectual faculties, and all serious reflection on what passes within it, or has a relation to moral character and conduct. It is incapable of investigating its own powers, of determining the manner in which they should operate, or of ascertaining the secret springs of its actions. Yet, without a habit of reflection and self-examination, we cannot attain a knowledge of ourselves, and, without self-knowledge, we cannot apply aright our powers and capacities, correct our failings and defects, or advance to higher degrees of improvement in knowledge and virtue. In order to ascertain our state, our character, and our duty, such inquiries as the following must frequently and seriously be the subject of consideration. What rank do I hold in the scale of being, and what place do I occupy in the empire of God? Am I merely a sensitive creature, or am I also endowed with moral and intellectual powers? In what relation do I stand to my fellow-creatures, and what duties do I owe them? What is my ultimate destination? Is it merely to pass a few years in eating and drinking, in motion and rest, like the lower animals, or am I designed for another and higher sphere of existence? In what relation do I stand to my Creator, and what homage, submission, and obedience ought I to yield to him? What are the talents and capacities with which I am endowed, and how shall I apply them to the purposes for which they were given me? What are the weaknesses and deficiencies to which I am subject, and how are they to be remedied? What are the vices and follies to which I am inclined, and by what means may they be counteracted? What are the temptations to which I am exposed, and how shall they be withstood? What are the secret springs of my actions, and by what laws and motives are they regulated? What are the tempers and dispositions which I most frequently indulge, and are they accordant with the rules of rectitude and virtue? What are the prejudices I am apt to entertain, and by what means may they be subdued? What are the affections and appetites in which I indulge, and are they regulated by the dictates of reason and the law of God? What are my great and governing views in life? Are they correspondent to the will of my Creator, and to the eternal destination that awaits me? Wherein do I place my highest happiness? In the pleasures of sense, or in the pleasures of intellect and religion,—in the creature or in the Creator? How have I hitherto employed my moral powers and capacities? How do I stand affected towards my brethren of mankind? Do I hate, or envy, or despise any of them? Do I grudge them prosperity, wish them evil, or purposely injure and affront them? Or do I love them as brethren of the same family, do them all the good in my power, acknowledge their excellences, and rejoice in their happiness and prosperity?

Such inquiries and self-examinations, when seriously conducted, would necessarily lead to the most beneficial moral results. In leading us to a knowledge of our errors and defects, they would teach us the excellence of *humility*, the reasonableness of this virtue, and the foundation on which it rests, and of course, the folly of pride, and of all those haughty and supercilious tempers which are productive of so much mischief and unhappiness, both in the higher and the lower spheres of life. Pride is uniformly the offspring of self-ignorance. For, if a man will but turn his eyes within, and thoroughly scrutinize himself, so as to perceive his errors and follies, and the germs of vice which lodge in his heart, as well as the low rank he holds in the scale of creation, he would see enough to teach him humbleness of mind, and to render a proud disposition odious and detestable, and inconsistant with the relations in which he stands to his Creator, to his fellow-creatures, and to the universe at large. Such mental investigations would also lead to self-possession under affronts and injuries, and amid the hurry and disorder of the passions,—to charity, candor, meekness and moderation, in regard to the sentiments and conduct of others, to the exercise of self-denial, to decorum and consistency of character, to a wise and steady conduct in life, and to an intelligent performance of the offices of piety and the duties of religion. But how can we ever expect that an ignorant, uncultivated mind, unaccustomed to a regular train of rational thought, can enter, with spirit and intelligence, on the process of self-examination? It requires a certain portion, at least, of information, and a habit of reflection, before a man can be qualified to engage in such an exercise; and these qualifications can only be attained by the exercise which the mind receives in the acquisition of general knowledge. If, then, it be admitted, that self-ignorance is the original spring of all the follies and incongruities we behold in the characters of men, and the cause of all that vanity, censoriousness, malignancy, and vice which abound in the world; and if self-knowledge would tend to counteract such immoral dispositions, we must endeavor to communicate a certain portion of knowledge to mankind, to fit them for the exercise of self-examination and self-inspection, before we can expect that the moral world will be renovated, and "all iniquity, as ashamed, hide its head, and stop its mouth."

5. Knowledge, by expanding the mind, will enable it to take a clear and comprehensive view of the motives, bearings, tendencies, and consequences of moral actions. A man possessed of a truly enlightened mind must have his moral sense, or conscience, much more sensible and tender, and more judiciously directed, than that of a person whose understanding is beclouded with ignorance. When he has to choose between good and evil, or between good and better, or between any two actions he has to perform, he is enabled to bring before his mind many more arguments, and much higher and nobler arguments and motives, to determine the choice he ought to make. When he is about to perform any particular action, his mental eye is enabled to pierce into the remote consequences which may result from it. He can, in some measure, trace its bearings, not only on his friends and neighbors, and the community to which he belongs, but also on surrounding nations, on the world at large, on future generations, and even on the scenes of a future eternity. For an action, whether good or bad, performed by an individual in a certain station in society, may have a powerful moral influence on tribes and nations far beyond the sphere in which it was performed, and on millions who may people the world in the future ages of time. We know that actions, both of a virtuous and vicious nature, performed several thousands of years ago, and in distant places of the world, have had an influence upon the men of the present generation, which will redound either to the honor or the disgrace of the actors, "in that day when God shall judge the world in righteousness, and reward every man according to his works." We also know, that there are certain actions which to some minds may appear either trivial or indifferent, and to other minds beneficial, which nevertheless involve a principal which, if traced to its remoter consequences, would lead to the destruction of the intelligent creation. Now, it is the man of knowledge and of moral perception alone who can recognize such actions and principles, and trace them to all their natural and legitimate results. He alone can apply, with judgment and accuracy, the general laws of moral action to every particular circumstance, connect the present with the future, and clearly discern the mere semblance of truth and moral rectitude from the reality.

In short, the knowledge of divine Revelation, and a serious study of its doctrines and precepts, must accompany every other species of information, if we wish to behold mankind reformed and moralized. It is in the sacred oracles alone that the will of God, the natural character of man, the remedy of moral evil, the rules of moral conduct, and the means of moral improvement, are clearly and fully unfolded. And the man who either rejects the revelations of Heaven, or refuses to study and investigate the truths and moral requisitions they contain, can never expect to rise to the sublime heights of virtue, and to the moral dignity of his nature. But, were the study of the Scriptures uniformly conjoined with the study of every other branch of useful knowledge, we should ere long, behold a wonderful transformation upon the face of the moral world. Pride, selfishness, malice, envy, ambition, and revenge would gradually be undermined. The spirit of warfare and contention would be subdued; rioting, drunkenness and debauchery would be held in abhorrence by all ranks; kindness and affection would unite the whole brotherhood of mankind; peace, harmony, and subordination would be displayed in every department of social life; "our judges would be just, and our exactors righteous; wars would be turned into peace to the ends of the earth, and righteousness and praise spring forth before all the nations." Were moral principle thus diffused among the different classes of society, it could not fail of producing a beneficial influence on the progress of the arts and sciences, and on every thing that might tend to

meliorate the condition of our fellow-creatures, and to promote the general improvement of mankind. For, in endeavoring to promote such objects, we meet with as great a difficulty in the *moral* as in the intellectual condition of mankind. The principles of *selfishness*, pride, ambition, and envy, and similar dispositions, create obstacles in the way of scientific and philanthropic improvements, tenfold greater than any which arise from pecuniary resources or physical impediments. But were such principles undermined, and a spirit of good-will and affection pervading the mass of society, the machinery of the moral world would move onward with smoothness and harmony; and mankind, acting in unison, and every one cheerfully contributing to the good of the whole, would accomplish objects, and beneficial transformations on the physical and moral condition of society, far superior to any thing that has hitherto been realized.

To what has been now stated, with regard to the influence of knowledge on moral conduct, it may, perhaps, be objected, that many instances occur of men of genius and learning indulging in dissolute and immoral habits, and that the higher classes of society, who have received a better education than the lower, are nearly as immoral in their conduct. In replying to such an objection we have to consider, in the first place, *what is the nature of the education such persons have received.* Most of the higher class have received a grammer-school education, and, perhaps, attended a few sessions at an academy or a university. There cannot, however, be reckoned above one in ten who pursues his studies with avidity, and enters into the spirit of the instructions communicated at such seminaries; as it is well known to every one acquainted with the general practice of such students in colleges and academies, that a goodly number of them, spend their time as much in folly and dissipation, as in serious study. But, although they had acquired a competent acquaintance with the different branches to which their attention was directed, what is the amount of their acquisitions? A knowledge of the Greek and Latin Classics, and of pagan mythology, in the acquisition of which five years are generally spent at the grammar-school, and two at the university—and the elements of logic, ethics, and mathematical philosophy. But such departments of knowledge, *in the way in which they have been generally taught*, have no necessary connexion with religion and moral conduct. On the contrary, by keeping the principles of Christianity carefully out of view, and even insinuating objections against them, some professors of these sciences have promoted the cause of infidelity, and consequently impeded the progress of genuine morality. What aid can be expected to morality from a mere grammar-school education, when the acquisition of words and phrases, and the absurd notions and impure practices connected with Roman and Grecian idolatry, form the prominent objects of attention. and when, as too frequently happens, no instructions in Christianity are communicated, and not even the forms of religion attended to in many of those seminaries? The mere acquisition of languages is not the acquisition of useful knowledge: they are, at best, but the *means* of knowledge; and although we would not discourage any one, who has it in his power, from prosecuting such studies, yet it is from other and more important branches of study that we expect assistance in the cause of moral improvement.

With regard to men of learning and genius, we have likewise to inquire into the nature and tendency of their literary pursuits, before we can ascertain that they are calculated to prevent the influence of immoral propensities and passions. Persons are designated men of learning, who have made proficiency in the knowledge of the Greek, Latin, French, German and other languages—who are skilled in mythology, antiquities, criticism and metaphysics, or who are profound students in geometry, algebra, fluxions, and other branches of the mathematics. But it is easy to perceive, that a man may be a profound linguist, grammarian, politician or antiquarian, and yet not distinguished for virtuous conduct; for such departments of learning have no direct bearing upon moral principle or conduct. On the contrary, *when prosecuted exclusively, to the neglect of the more substantial parts of knowledge, and under the influence of certain opinions and prejudices*, they have a tendency to withdraw the attention from the great objects of religion, and consequently from the most powerful motives which excite to moral action. We have likewise to inquire whether such persons have made the Christian revelation one great object of their study and attention, and whether they are frequently employed in serious contemplations of the perfections of the Creator, as displayed in the economy of the universe If such studies be altogether overlooked, we need not wonder that such characters should frequently slide into the paths of infidelity and dissipation; since they neglect an attention to those departments of knowledge which alone can guide them in the paths of rectitude. We may as soon expect to gather "grapes from thorns, or figs from thistles," as to expect pure morality from those, however high they may stand in literary acquirements, who either neglect or oppose the great truths of religion. We do not mean, however, to insinuate, that the subjects alluded to above are either trivial or unworthy of being prosecuted. On the contrary, we are persuaded, that there is not a subject which has ever come under human investigation, when prosecuted with proper views, and in connexion with other parts of knowledge, but may be rendered subservient, in some way or another, both to the intellectual and the moral improvement of man. But when we speak of diffusing useful knowledge among the mass of mankind, we do not so much allude to the capacity of being able to translate from one language into another, of knowing the sentiments of the ancient Greeks and Romans, and the character and squabbles of their gods and goddesses, or to the faculty of distinguishing ancient coins, fragments of vases, or pieces of armour—as to the facts of history, science and revelation, particularly in their bearing upon the religious views and the moral conduct of mankind. And if the attention of the great body of the people were directed to such subjects, from proper principles and motives, and were they exhibited to their view in a lucid and interesting manner, there cannot be the smallest doubt, that the interests of virtue and of pure and undefiled religion would be thereby promoted to an extent far beyond what has ever yet been realized.—*Dick.*

THE CULTIVATOR—AUG. 1835.

TO IMPROVE THE SOIL AND THE MIND.

EFFECTS OF THE WINTER.

The cold of last winter is known to have been unprecedently severe. It was not, however, until recently that we were enabled fully to appreciate the injury which it had caused to trees and plants, in open situations, which usually withstand our winters. The following memoranda of its effects upon trees and plants in our grounds, may not be without interest to some of our readers.

The peach, and Isabella and Catawba grapes, exposed to the weather, were either destroyed or materially injured. The pear, plum, cherry, (particularly the duke cherries) were not materially injured, though some were killed. The spice bush (laurus benzoin) an indigenous shrub, the alianthus glandulosa (tree of heaven) common catalpa (C. syringifolia,) the paper mulberry, (broussonetia papyriferia) the Chinese mulberry (morus multicaulis) and the English hawthorn (cratægus oxyacanthus) were generally killed to the ground, or to the surface of the snow. The weeping and curled leaved willows (salix babylonica and S. crispa) were seriously injured, the latter particularly. Eight or ten feet of the tops of three thrifty black walnuts (juglans nigra) and the entire branches of a Madeira nut (juglans regia) of 12 years growth in our garden, were destroyed; and Michigan and Ayreshire roses, and some other climbing varieties, in an exposed situation, as also the scarlet monthly honeysuckle (caprifolium sempervirens) were mostly killed to the ground.

SILK COMPANIES.

The doubts which we expressed in a former number, as to the ultimate utility of companies for producing silk, have been animadverted upon by some of our cotemporaries. Our opinion was perhaps expressed without due consideration, and may have been founded in misconception of their tendency. Yet we confess we have seen nothing, in reply, to satisfy us of our error. The raising of the mulberry, and the feeding of the silk worm, is emphatically a business of the farm—of the cottage,—a simple labor, in which females and children, who do not essentially aid in supporting a family, may turn their services to profit. It admits of no division of labor—requires no costly machinery, and involves, comparatively, no expense. Every family, of the most limited means, can raise the mulberry, and produce cocoons, as well as a company of associated capitalists; and in this way, the business may give employment and bread to thousands who would never seek for either, and if they did might not obtain them, in the employ of a company. The great desideratum is to secure, to those in the middle and lower walks of life, in regard to property, the means of *helping themselves.* It is well known, that by the introduction of manufactories, concentrating great capital and influence, most of the household manufactures, in cotton, woollen and linen, which gave a wholesome and salutary employment to the female sex, have gone out of use. We want a substitute for the family, and *that* the silk business promised. It is also well known, or may be known, that the manufacturers of woollens have clubbed their wits and their capital, to lessen the profits of the American wool grower, by forcing great quantities of the foreign article into our market. In 1831 it proved rather an unfortunate speculation for them; but in the current year, their prospects are more flattering. They have made up a purse of some 70,000 dollars, and sent their agents abroad to purchase foreign wool, not exactly for their own use, but to speculate upon in the market. They have become mercantile speculators, to the prejudice of the wool growers, whose aid they invoked, and

efficiently received, in the tariff conventions at Harrisburgh and New-York, to protect the *common* interests, as was asserted and believed, of the wool *grower* and wool *manufacturer*.

Give men power, whether in pecuniary or political affairs, and they are prone to abuse it—by making it subservient, *first*, to selfish views. They soon come to think, that what was given to them for the public good, they have a right to use for private gain;—and whenever this feeling becomes ascendant, it grows and strengthens with age, until it supplants, or smothers, some of the best emotions of the heart.

Silk Companies, like most other monied associations, are formed *to make money*—to make capital more productive, and with less personal risk, in a *corporate*, than it is likely to become in a *private* business. And it generally happens, that some counterbalancing good is held out to the public, as a consideration for corporate privileges. But we confess we cannot discover any thing of this sort in the case under consideration. The business of raising the mulberry and producing silk cocoons, is as much a farm— a family business, as milking cows and making butter, or rearing and shearing sheep; and we should think that associated capital, and corporate powers, were about as necessary to the prosecution of one as the other. Now our fear is, that when corporate and private interests come in competition in the silk, as they are found to do in many other kinds of business, the weaker will fall before the stronger interest—that private enterprise will be paralyzed, or made subservient to corporate cupidity. In a business where all can compete, individually, upon equal grounds, we hold it to be wrong to destroy this equality, by giving to a part corporate privileges, to the manifest prejudice of the rest. All chartered companies are a sort of monopoly—aristocratic in their nature and tendency, and are only salutary, under a republican government, where the object to be attained is of manifest public utility, and beyond the reach of ordinary individual capital and enterprise. We do not object to companies for *manufacturing* silk, though we verily believe that no good is likely to grow out of associations for producing the raw material.

THE GOOSEBERRY,

Is among our choicest garden fruits, and is one of the earliest species which is fit for the table. But in many locations it is subject to mildew, which not only blights the fruit, but the anticipations of the cultivator. Mildew, according to Darwin, is a plant of the fungus kind, which vegetates without light, or change of air, in the same manner as the generality of mushrooms; and penetrates with its roots the vessels or plants to which it adheres. Wyllich says it is a topical disease only to be cured by a topical remedy. We have heard, and seen somewhat ourselves, of the effects of topical remedies, in which lime, salt or sulphur have constituted the preventive or cure of this disease, not only upon the gooseberry, but upon the grape, wheat, &c.

In the grape houses about Boston, and in our own grape house, sulphur is efficaciously employed, in its dry state, dusted upon the young fruit, to prevent mildew, or to check it where it has already appeared. Here neither winds or rain occur to wash or blow it off; and one or two applications suffice for the season. It may be applied out doors in a liquid form, by first mixing the sulphur with milk, with which it incorporates—and then diluting freely with water, sprinkle it upon the leaves and fruit with a white-wash or other brush.

A weak brine, or salt, scattered about the roots of the gooseberry and grape, in May, is said to operate as a preventive. Before we were aware of it, we perceived our gooseberry crop affected with mildew, when the fruit was about the size of peas. We immediately applied a weak brine; and three days afterwards, dusted the bushes with lime. The disease was checked, and the berries have continued to swell, and appear healthy. Whether the salt or lime was separately or jointly beneficial, we are unable to say; but the remedy seems to have proved effectual. In the application of either of these substances, care must be taken not to apply them in excess, lest they should destroy the plant as well as its parasyte. Salt is best applied to vegetation in a liquid form, as it is then more equally distributed. Lord Manners applied it with great success, in the proportion of one ounce of salt to a gallon of water. Two ounces to a gallon proved hurtful to vegetation, but the second year the herbage where it was applied was abundant. All the land on the coast is treated with sea water in China and Hindostan. The utility of salt, in preventing or destroying mildew, has been announced, by the Rev. E. Cartwright, of London, as a discovery of great importance to agriculture. He declares it to be an absolute remedy for the mildew in wheat. His directions are: take "salt one part, water eight; with this mixture let the diseased grain be sprinkled; in three or four days the mildew will vanish, leaving only a discoloration on the straw, where it had dried off. Two hogsheads of the mixture will suffice for an acre. The best mode of applying it is with a white-wash brush, having a tin collar made water tight, to prevent the mixture dripping down the operator's arm, and running to waste. The operator having a pail of the mixture in one hand, with the other dips the brush into it, and makes his regular casts, as when sowing broadcast; in this way he will readily go over ten acres a day."

T. A. Stoughtenburgh, Esq. of Johnstown, has an east and a west high tight fence to his garden. His gooseberries on the east fence, he informs us, which do not get the morning sun, have been uniformly free from mildew; while those on the west fence, the soil at both being similar, are covered and spoilt by mildew. This has happened for years. In the compact part of Albany, in the small enclosures, excluded by buildings from the morning sun, the gooseberry is seldom affected with mildew.

THE CURRANT,

Like the gooseberry, should be in every farmer's garden. The fruit of the red and white varieties are nutritive and pleasant, and afford, in many ways, nice dishes for the table. Like the gooseberry it is propagated by cuttings, and requires no great space or labor to make it profitable in the family and for the market.

Propagation. Take thrifty well ripened shoots of the preceding season's growth, and cut them 12 to 18 inches in length, and if it is desired to make them trees, or to grow them on a single stem, gouge out all the eyes with a sharp knife, except three or four upon the upper extremity, which are designed to form the branches. Cut the lower end square at a bud; it will sooner granulate, and throw out roots;—and when planted, insert two-thirds of the cutting in well dug ground. The cuttings are best when taken off in autumn, soon after the leaves fall. They may be put out then, or, what is better, kept till spring, in a cellar, or buried in the ground. Thus every man may procure cuttings in autumn or winter, to be planted in spring. They may be planted where they are to stand, or in a nursery bed, to be removed after one or two years. They may be planted in rows 10 feet apart, and 4 feet in the rows.

The Culture consists in digging the ground about the bushes in the spring, keeping down weeds, thinning the wood, and cutting in the long shoots.

The fruit may be used for culinary purposes while green; and, in its ripe state, is converted into wine, jelly, and is used extensively, in various ways, for the table, with other food, in which forms it is gently laxative, emollient, and sometimes anodyne. The jelly is grateful and cooling in fevers, and no less so as a conserve at table; and the wine affords an excellent summer drink, especially with the addition of water. Directions for making the jelly and wine will be found under the head of household affairs.

Sorts.—There are two varieties of both red and white, termed the common and Dutch kinds, the latter growing on lower bushes, and affording larger fruit, than the common kind. The Champaign is another kind, distinguished principally by its pale colour. Mr. Knight has produced a sweet kind, not yet introduced into our culture.

COMETS.

An elaborate and instructing article upon *the approaching comet*, has appeared in the Edinburgh Review, from which it would seem that two comets are expected to pass the earth's orbit the present year, which bear the names of the astronomers who first calculated the period of their return. The first is called *Encke's comet*, whose period round the sun is 1200 days. It appeared in 1825, 1829 and 1832, and its return is expected about this time. It is considered by our authers as a planet, revolving in our system between the orbits of Jupiter and Mercury.

The other is termed *Halley's comet*. Its revolution is computed at 75 years. It appeared in 1531, 1607, 1682, and 1758. It is expected to be visible in Europe in the latter part of August or begin-

ning of September, "that is," to quote the writer, "rather more than two months before its arrival at that point where it will be nearest the sun. Its situation also will be favorable to the splendor of its appearance. It will most probably be distinguished by the naked eye, like a star of the first magnitude, but with a duller light than that of a planet, and surrounded with a pale nebulosity, which will slightly impair its splendor. On the night of the 3d of October, about midnight, it will appear in the east, at an elevation of about 30 degrees; and will be a little above a line joining the bright star, called Castor, with the star called *a* in the Great Bear. Between that hour and sunrise, it will ascend the firmament, and will cross the meridian near the zenith of London about sunrise. On the night of the 7th, the comet will approach the well known constellation of Ursa Major: and between that and the 11th it will pass directly through the seven conspicuous stars of that constellation, following the track we have here attempted to mark. In our latitude, this constellation, [known by the common names of the *pointers, wagon wheels*, &c.] never sets and consequently the comet may be looked for at any hour of the night. But the time most favorable for its appearance will be on the 7th, before the commencement of the morning twilight; on the 9th, at any time in the absence of twilight, when it will pass during the night from the north-west to the north-east, its altitude not, however, exceeding thirty-five degrees; and on the 11th, after the close of the evening twilight, when it will be seen approaching the constellation of the Crown, in a direction a little north of west, and at an altitude of about thirty degrees.

"Towards the end of Nov. the comet will plunge among the rays of the sun, and disappear, and will not issue from them on the other side until the end of December. On its departure from the sun, it is doubtful whether it will be visible at all; but, under any circumstances, it cannot remain long apparent."

The orbit of Halley's comet is a very oblong oval, the nearest point of which to the sun is about half the earth's distance, or 50 millions of miles, and its extreme remote point 355,000,000 of miles. At its nearest point to the sun, the heat and light of that luminary will be four times the heat and light at the earth, and at the greatest distance they will be about twelve hundred times less. If the earth were transported to the more remote extremity of the comet's orbit, every liquid substance would become solid by congelation; and it is extremely probable that atmospheric air and other permanent gases might become liquids. If the earth was, on the other hand, transferred to the nearest extremity of the comet's orbit, all the liquids upon it would be converted into vapor, would form permanent gases, and would either by their mixture constitute atmospheric air, or would arrange themselves in a strata, one above the other, according to their specific gravities. All the less refractory solids would be fused, and would form in the cavities of the nucleus oceans of liquid metal. Such are the conjectures of philosophers.

Comets, in former times. were supposed to portend direful evils, as earthquakes, war, pestilence, famine, &c. Science has dispelled such fears, and it has been demonstrated from the past, that comets have not hitherto produced any sensible influence on the earth. They are supposed to be mostly masses of vapor, totally divested of all concrete or solid matter: both Sir William and Sir John Herschell, as well as other astronomers, having, on account of their translucency, discovered stars and constellations through their heads or centres.

Laighton's Threshing Machine, is a recent invention, recommended by the inventor, for its utility, cheapness and simplicity: and from a cursory view of it, while in partial operation, we are rather disposed to endorse the recommendation. We are not however prepared to give a definite opinion, until we see it subjected to a more prolonged and satisfactory trial. The machine occupies about the space of a common wagon box, and the sweep by which it is propelled, and which is attached to it, works in a circle of 13 feet diameter. It is easily removed, and with a little attention not liable to get out of order, and may be readily repaired. It is driven by one horse power, requires two men to attend it, does not cut or break the straw, will thresh 70 to 75 bushel of grain per day, will do it well, and costs $75. The proprietor has not left us his address.

Liquid manure.—A correspondent in Loudon's Gardeners' Magazine speaking of the cultivation of the ground at Ghent, says, "Liquid manure may be here named, and very justly so, their *summum bonum*; as if applied when the corn is sprouty, or just before a rain, it has an effect which no other manure can have. It destroys insects, and throws a surprising degree of vigor into the crops. It is pumped [from the tanks under ground, into which it is conducted by drains from the stables, &c.] into a barrel-shaped water cart: and, when brought upon the land, the plug is taken out, and the liquid, flowing over a board something in the shape of a fan, as the cart proceeds, is dispersed on both sides, over a space, perhaps, of 4 or 5 feet. The cart has generally three wheels."

Scraping Apple Trees.—George Olmstead, of East-Hartford, publishes in the New-England Farmer, that he has experienced great benefit from scraping the ross from his apple and pear trees, with a hoe, in June or July. There is no mistake in this. The rough bark of those trees affords shelter to numerous insects, and a receptacle for their eggs, prejudcial to the tree or its fruit. A smooth clean skin is of as much value to the tree, as it is to the animal; its functions are important to the health and growth of both. The fault is, Mr. Olmstead does not go far enough: he should *clean*, as well as *smooth* the surface of his trees; and we do not think there is any thing better for this purpose, at least for the apple, than a strong ley of wood ashes or potash. We have had a dozen years experience of the benefits of this wash, though we have not in this time applied it more than twice to the same trees. It is applied to the bole, and as far as convenient to the larger branches, with a common shoe brush, affixed to the end of a stick a yard long, the loose bark, where there is such, being previously scraped off. It imparts to the bark a handsome, smooth, healthy appearance, destroys insects and their eggs, takes off the moss, and seems to be to the apple tree what salt is to the animal—a highly useful condiment. The objection to lime-wash is, that it stops up the pores of the bark, and by its caustic quality contracts the sap vessels, and gives to the exterior a dry and rigid appearance. The ley, on the contrary, removes every obstruction to a wholesome perspiration, and leaves the bark so soft and pliable that it may almost be indented with the thumb.

Fence Posts.—An excellent method of rendering these durable in the ground, is published in the American Eagle. It consists, 1, In peeling the posts, and in sawing and splitting them if too large; 2. In sticking them up, under cover, at least one entire summer; and 3. In coating with hot tar, about three feet of the butt ends, which are to be inserted in the ground—after which they are ready for use. We have no doubt the advantages of this mode of preparation will more than remunerate for labor and expense. Our reasons for this belief are briefly as follows: The sap of all non-resinous trees, will ferment in the presence of heat and moisture, and cause the decay of the wood. To prevent this natural consequence, the first object should be, when a tree is felled, to expel the sap from the pores of the wood. This is done by peeling, splitting, sawing or hewing, and exposing the wood to the drying influence of the sun, or at least of the air. The process is faciliated too by immersing the wood in water for a time, which liquifies the sap, and favors its expulsion. And when the moisture has been expelled, the next object is to keep it out, by paint, tar or charring. In the mode recommended above, the moisture *is* expelled by the peeling, sawing and summer-drying and its return is prevented by the coating of tar. The retention of the bark upon timber is particularly prejudicial, not only in preventing evaporation, but as affording shelter to various species of the borer, which under its cover, carry on their depredations upon the timber. We have seen pine logs nearly destroyed in a summer by worms, where the bark had been left on, while those which had been peeled remained uninjured. The best timber is obtained from trees which have stood a summer, or a year, after they have been girdled and peeled.

The bodily powers are impaired by the diseases of the mind.—*Ovid.* And we may add, *vice-versa*.

Alternating crops.—The present season has afforded a good opportunity of testing the utility of alternating tillage and grass crops: For, so far as our observation has extended, meadows of similar quality of soil, have been productive in an inverse ratio to their age, i. e. the longer they have been in grass, the lighter the product. In some instances the difference has been three to one in favor of the new stocked lands. The more than common difference apparent the present year we ascribe to the want of heavy rains, in the last autumn, winter and spring. The light rains penetrated more readily grounds which had recently been under the plough, and which were comparatively porous and pulverent, than they did those which were rendered in a manner impervious, and which had remained for years undisturbed by the plough. But if grass greatly deteriorates, grains do much more so, without heavy dressings of manure, and the alternation of roots. Tillage is admirably fitted to pulverize, clean and prepare the soil for grasses; and grass leys are equally beneficial to tillage crops, by the vegetable matter—the food—which they give to the soil. We always suspect, that the man who advertises his farm, as "suitably divided into plough, meadow, and pasture land," pursues the old platform system, and that he knows nothing of the immense advantages, particularly upon sands, gravels and loams, which result from a judicious system of alternate husbandry. We do not wonder that such a farmer, now-a-days, should be obliged to sell his farm. Pastures, as well as tillage and grass crops, are augmented in value by the alternating system. There are districts which form an exception to the rule; but generally, every acre of a farm, which is not a rock, may, by thorough drainage, be rendered capable of yielding grain, grass or pasture; and the interests of the cultivator would be promoted by subjecting them to this alternation.

Grafting in May and June, is recommended, in Loudon's Gardeners' Magazine, by Mr. Thom, as preferable to March and April. We remember that Mr. Corse, of Montreal, recommending to us a like course. He had succeeded with grafts that had lain for weeks in his room, and which were dry, shrivelled and apparently dead.

Dear Fruit. Loudon's Magazine for June, quotes the price of peaches in Covent Garden market, at £3 ($13.33) per dozen, about 111 cents each! cherries at £1 to £1 10*s.* per lb. and strawberries at 1*s.* to 1*s.* 6*d.* (22 to 33 cents) per ounce! These were of course forced fruits.

QUERIES AND ANSWERS.

"I have heard it asserted, that rye grown in an orchard will certainly destroy it. By publishing your opinion on the subject, you may perhaps give important information to others as well as myself.—*B——. Bucks Co., Pa.*

Answer—We have had no practical experience in this matter, nor have we seen the fact before stated. We should infer, that in sowing rye among apple trees, the grain, rather than the trees, would be most likely to suffer.

Our Bucks Co. correspondent adds, "I had an ox in the fall affected with a disease very much resembling the cholera in the human species. I gave him linseed oil and glauber salts through the day, but without any good effect. By evening he became so weak, and appeared to have so much pain, that he could no longer get up. I then gave him about half a pint of strongly camphorated whiskey, and left him for the night. The next morning he was well, with the exception of weakness, and soon recovered."

Bee-House—"I wish you would describe the inside fixture of your bee-house. Is there staging all round to support the comb? and is the box in which the bees are when put in finally left?"—*W. Cowan, Lower Chaunford, Pa.*

Answer—The staging in our garret bee-house is the breadth of the common hive. It should be somewhat broader. It may be upon one, two or three sides, according to the size of the apartment, but at least on the side next the wall, where the aperture is made for the passage of the bees through the wall. The hive is placed directly above this aperture, where a place is previously fitted for its reception, and it remains there permanently. The staging resembles the shelves of a dry goods store, 6 to 12 inches apart, with three or four laths substituted for the board shelves.

"I have a grape vine in my garden, which is a very fine *promiser*, but no *bearer*, owing, I presume, to its want of a mate to fructify its blossoms. It has been in this town many years, but never brought any fruit to maturity. I send you a branch with the blossoms and leaves. Be pleased to inform me how it may be rendered productive, or send me a *mate*."—*Jesse Grove, Rutland, Vt.*

We apprehend our old school-mate and his neighbors have been bestowing their labor upon a seedling vine, which will never afford them fruit, even with the assistance of a *mate*. Vines raised from seed often prove barren, for want of the pistil, the female organ of the flower, and we know of no process by which such can be rendered fertile. Our practice has been to throw them away. We advise Mr. G. to follow our example, and to raise from cuttings of vines known to be fertile. His specimens came to hand, but the blossoms were too much decayed to permit us to determine their character.

Hedges.—Reuben Wheeler, of Vergennes, Vt., recommends what he terms the white thorn as a superior plant for hedges. He directs that the haws, or seeds be gathered in the fall, buried in the ground, and suffered to remain there till the second spring, when they may be sown in drills—they will grow one foot the first season, and if properly managed will make a good fence in six years. As the white thorn (C. oxyacantha) is exotic, and we believe not yet introduced into Vermont, we presume Mr. Wheeler has allusion to some of the indigenous species, which are of more vigorous growth than the white thorn of Europe. In burying the haws, we have mixed two parts of earth with one of seed, laid them in a ridge upon the surface, in the garden, and covered with about three inches of mould. They were once overhauled during the summer, replaced and recovered. In the autumn following they were found to have germinated, and were *then* sown in drills.

Mr. Wheeler sends us also his mode of making pickles, which is, to take for each barrel 4 lbs. good salt, ½ lb. alum, 1 lb. salt petre, with water enough to cover the cucumbers when the barrel is filled. Wash the cucumbers when put in, and keep the barrel in a cool place. When wanted for use, take them from the pickle, and turn upon them scalding vinegar. They will be fit for the table in 24 hours, fresh and green.

Rhubarb, or Pie plant.—The seed of this plant having ripened, it may be sown immediately with advantage, on a bed of good earth. Sow in drills, cover the seeds ¼ of an inch, press the earth smarthly to them, thin the plants, and next spring they may be planted out, at a yard apart, and the stalks may be used the first season.

Mowing Machines.—Two implements have recently been invented, one we believe in Columbia and the other in Montgomery, for cutting grass by horse power. We have seen the latter; but as we did not witness its operation, we are not prepared to speak of its merits.

SAXONY SHEEP.

[It was not until to-day (July 29) that the article from which the following extract is made, met our eye. Our correspondent R. in our May No. in answering queries which we sent him, animadverted somewhat severely upon the Saxony breed of this animal. Mr. Grove, who is owner of a large flock of Saxons, selected by himself in Germany, an excellent sheep manager, and a gentleman whom we highly respect and esteem, thinking the communication of R. calculated to prejudice his interests, published a reply in the June No. of the New-York Farmer. We make from it the following extract, unsolicited, as an act of justice to Mr. Grove; and at the same time venture to express our belief, that our correspondent R. intended nothing personal in his communication to the prejudice of Mr. G. For ourselves, never having been engaged in the sheep business, and knowing very little of the relative merit of breeds, we are free to say, it did not occur to us that injury would accrue to the feelings or interests of any individual from the publication.]

THE EXTRACT.

"There is in Saxony a breed of sheep which were introduced and reared with great care by Augustus, Elector of Saxony and King of Poland, which, in commenoration of the introducer, have been called the Electoral breed. I was brought up in that country to rural husbandry, particularly to the care and management of sheep, and was perfectly acquainted with the purest and most celebrated flocks. From these I selected my sheep, and brought them to this country. They bore the fatigues of the voyage re-

markably well, and arrived in safety. I sustained some little losses at first, from being a stranger to the peculiarities of the country, from having to hire my sheep kept, for want of suitable accommodations, and of such fodder as I wished. During the last eight years, and since I had a farm of my own, I have not lost over 1½ per cent: for the last year not more than 1 per cent. The last two winters I had no loss, and the last year I raised 101 lambs, from 100 ewes, one only of my ewes having twins. The sheep which R. speaks of do not shear more than 2¼ lbs. My flock, last year, of 200 ewes and lambs, averaged 2 lbs. 6½ ozs. If I had had a proportion of wethers, they would probably have averaged 3 lbs. My grown bucks sheared 4½ lbs. He says they (that is, the sheep he speaks of,) are poor nurses: my ewes are uncommonly good. All these facts can be abundantly proved from my sheep records, in which births and deaths, and every thing of importance, is recorded, and from credible witnesses. All these facts, in which there is no guessing, show conclusively that R's statements about the *pure breeds* of Saxon sheep did not allude to my sheep at all; and therefore I hope there will be no unkind feelings between us.

Respecting the "*miserable*" quality of the meat, if R. will procure the best sample of South Down mutton he can find, I will meet him at any place he shall name with a sample from my Saxons; both shall be cooked in the same manner; he shall select one or more of the most accomplished connoisseurs in good eating, and I will rest that point on their decision.

I have but one little statement more to add, and I will then leave the subject to the public. The prices current of wool in New-York, given in the Cultivatior for the last month (May) are for Saxony, 80 cents; for half-blood 53 cents, and for native, 33 cents. Now, allow my ewes to produce 2¾ lbs., (and they will rather overgo than fall short of it,) then at 80 cents the fleece will bring $2.40. Allow the South Down ewes to shear 4 lbs. and allow it to be equal to the half blood merino, and the amount will $2.12. Allow the Bakewell breed to produce 7 lbs., which is 1 lb. more than R. rates them; this at 33 cents will be $2-31. The three fleeces will stand thus:—Saxon, $2.40—South Downs, $2.12—Bakewell, $2.31.

With these remarks, I submit the subject.

HENRY D. GROVE."

Wool and Hair are known to possess highly fertilizing properties—they are in reality, like bone and horn, concentrated manure. Until recently, refuse flocks of either could not be obtained in any considerable quantity; but our manufactories now afford them to such an extent as to entitle them to the farmer's notice. We have employed hair, combined with oil, from a seal skin manufactory, in considerable quantity, and with the best effect. Woollen factories furnish considerable waste flocks, combined with grease and dirt. Mr. Jabez Burroughs, of Watervliet, has been experimenting with these, and informs us that they exceed all other manure, when applied in one-third the quantity that hog manure is applied.

For Budding, Geo. H. M'Carter, esq., of Newton, N. J. recommends to us the inner husk of Indian corn for ligatures, as superior to bass matting, and as a material within the reach of all. The hint is worth being remembered.

CORRESPONDENCE.

BEET SUGAR, &c.

Dexter, (Mich.) May 12, 1835.

J. Buel, Esq. Sir.—I recollect a few years since of seeing an account of sugar being made somewhat extensively, in some parts of France, from beets. As this part of the country is at some distance from the sea board, and also destitute of the sugar maple, which renders sweetening quite expensive, if you are acquainted with the kind of beet used, together with the process of manufacturing, you would oblige many of your subscribers by inserting the same in the Cultivator. Or, if you are acquainted with any other substitute, it would be equally acceptable.

Should it not be foreign to the object of your paper, will you please to give us a recipe for making "India Rubber Varnish," for rendering leather water-proof? And here, permit me without being suspected of flattery, to add my name to the list of encomiasts of your valuable paper. I think the two first numbers of the second volume are worth the price of the year's subscription; at least they are so to me.

Yours respectfully,

WM. A. JONES.

REPLY.

Mr. Jones' inquiry may be important to the far west, for the reason's he has stated. We therefore subjoin a description of the process of making beet sugar, as given by Chaptal, who was at the same time an extensive manufacturer of the article and an eminent chemist, with some other facts connected with the subject. Our quotation is from Orfila's Practical Chemistry, page 129–30.

"The beets are sown at the end of March or in April, [last of April or first of May with us,] when frost is no longer to be apprehended; it seems nearly indifferent whether the seed of the red, yellow or white beets are taken. The earth most proper for their cultivation, is that which has depth, and at the same time is light and rich; that which comes from the clearing up of meadows, alluvial soil, dunged and long worked, are preferred for this purpose.—These grounds should be prepared by two or three very deep ploughings, and a sufficient quantity of manure. The beets are sown at random like wheat, and it is then harrowed; this mode has more advantages than that of sowing by the hand, the drill plough, on beds, or in the nursery. All the plants which grow near the beets, and whose vicinity is very hurtful to them, are pulled up by the hand or a weeding hook. The period of taking up this plant differs greatly, according to climate; in the environs of Paris, and even at 40 or 50 leagues from the capital, we should proceed to take them up in the beginning of October, whilst in the middle countries, this operation should take place much sooner; without attending to this, it happens that the sugar formed is decomposed by the process of vegetation, and is replaced by nitrate of potash.

"After stripping the beets of their leaves, they are placed in the open air, on a very dry soil, beyond the reach of inundation, and which is covered with some pebbles and straw; the beets are placed in beds, in the centre of which a hole is left to give exit to the vapor, and the beds are covered with straw. These precautions are indispensable, since, on the one hand, the beets freeze at 1° to 0° (32 to 34° Fah.) and on the other, they germinate at 8 or 9° (48° Fah.) especially if the air is moist. It would be more convenient to preserve them in barns and granaries; but it is almost impossible to find a situation of this kind, capable of holding all the beets we want. If, nevertheless, we choose to put them into magazines, we must, 1. leave them in the field some days to dry; 2. uncover them when the temperature is only a few degrees above zero, unless it rains; 3. separate the heaps, remove the frozen or putrified beets, and renew the beds, [piles.]

"*Extraction of the Sugar.*—We cut off the necks and small roots of the beets, and scrape the surface with knives. They are reduced to a pulp by means of cylindric graters, [similar, probably to our grater cider mill,] moved rapidly by hand, or by some contrivance. The pulp is pressed, at first, in small lever presses, and then by much more powerful ones; by this plan, we procure from 65 to 75 per cent of juice, which marks from five to ten on Baum's areometer. This juice contains, besides those substances found in the juice of the sugar cane, malic and acetic acids, and scarcely will it afford more than three or four per cent of sugar. It is received in a boiler called the clarifyer, which is heated when one-third or one-half filled. When the temperature is 65 or 66° (Cent.=150° Fah.) the fire is stifled. We then throw into the boiler about 48 grains of lime, slaked with warm water, for every quart of juice, and the liquor is then brought nearly to ebullition; it is taken from the fire and on its surface is soon perceived a layer, which is skimmed off. The liquid is then made to run out by means of a stop-cock fixed at the distance of a foot from the bottom of the boiler.

"The liquid is quickly boiled, and sulphuric acid diluted with 20 parts of water, is poured on in the proportion of 1-10 of the lime employed; it is stirred, and it is better the mixture should have a slight excess of lime than of acid. We mix with the liquor 3-100 of animal charcoal, perfectly fine; for instance, that which is produced in the preparation of Prussian blue. Immediately afterwards, we add half of the charcoal which has served in a former process, and the boiling is continued until the liquid marks 18 or 20° on the areometer; it is suffered to rest until the next day, when it is strained through a woollen cloth; it is then put into a round boiler, two feet in breadth and ten inches high; this is one-third filled, and it is again boiled. If the contents are burned, the fire is relaxed, and the liquor is stirred; if the bath foams much, a little butter is thrown in and the heat moderated. The boiling is ended, when, on taking a little of the syrup between the thumb and fore finger, and quickly separating them, a thread is formed, which breaks *dry*. At this period the fire is covered, and after some minutes the syrup is poured into *coolers*, and from thence into the cones"—after which it may be subjected to the processes of *refining* or *claying*, like West-India sugar.

The manufacture of beet sugar was prosecuted in France extensively during the late war; but on the return of peace, was in a measure abandoned. It has recently been revived, and is said to be rapidly increasing; and land for beet culture lets for a higher rent than any other production. About 18,000,000 pounds, or 13,000 tons, are said to be produced annually, and the profits are so great, that it has been recommended to the French legislature to tax it for revenue.

According to the tables of Dubrunfaut, the average product in Flanders, in ten cases cited, was 23,751 killograms the hectare. The killogram is 2½ lbs.; the hectare 2½ acres. He estimates the raw sugar at four per cent on the weight of the roots, the pulp to be worth 12 francs, (about $2.28,) per ton, for feeding stock, and the molasses worth something additional for distillation. Dr. Achard obtained 6 lbs. 3 oz. raw sugar from a quintal of roots. Dubrunfaut estimates the cost of the sugar to the producer, at about five cents per pound; at the manufactory of M. Cresspell, the cost was six to seven cents per pound.

Chemistry has discovered a new material for sugar, in wheat, the great staple of the west. It was first announced by a Russian chemist, M. Kirchoff, that starch may be converted into sugar, by being boiled for some time, in

very dilute sulphuric acid; and M. The. Saussenr found that 100 parts of starch made 110 per cent of sugar, and he concluded that sugar is merely a compound of starch and water. According to M. Berzelius, starch and common sugar are thus composed, though other chemists make the component parts of sugar somewhat different.

	Starch.	*Sugar.*
Oxygen,	49.6	49.856
Carbon,	43.5	43.265
Hydrogen,	7.0	6.879

Hence, the abstraction of a little hydrogen and carbon, would convert starch into sugar.—*See Brewster's Encyclopedia.*

The butternut affords sugar. We have a sample before us. The maker informs that the butternut yields as much saccharine matter as the maple. Our sample is not well granulated, having been merely made as an experiment.

India Rubber, or caoutchouc, or gum elastic, may be dissolved in oil of turpentine or vitriolic ether, by the application of a gentle heat; and the directions for varnish prescribe equal parts, by weight, of caoutchouc, linseed oil and essence of turpentine.

FATTENING CATTLE—ELDER BUSHES.

JESSE BUEL, ESQ—Dear Sir—Having recently become a subscriber to, and recipient of the valuable publication which you conduct, permit me to comply with the invitation you have given, of making known some of the practical observations which have proved useful in my agricultural pursuits. I have for some years, if not profitably, industriously, been cultivating and improving a worn out farm. I have groped along without any guide, excepting such as the "mother of inventions" has suggested: but sir, I have succeeded, and the land which would hardly produce white beans, now produces first rate wheat and grass. The Cultivator is the only work on agriculture I have had the opportunity of taking, and from the remarks on various modes of practice I shall improve them. There are two subjects I can recommend as having been useful to me, and perhaps they have long been known and practised by you and others. If they have been recommended, I am ignorant of it, and to new readers of your valuable publication they may prove useful.

The first is the manner I treat my beef cattle, which I wish to fatten as cheap as possible. I begin in the fall by giving them the best pasture I have, to have them in good case for wintering; when fattening time commences, I put my steers by themselves in some clean field,* where water is convenient for them, having stacked some of my best hay in such parts of the field as needs manuring most, and as often as once a week or more, draw out and scatter to them straw, with brine scattered on it, a part of which they eat hastily and make beds of the remainder. My oxen and farrow cows, I keep at the barn yard apart, and feed them lightly once or twice a day, always reserving my best salted hay for spring foddering. When I wish to put them to grass, I take a sufficient number of troughs to the pasture field, if not convenient to let them to the barn yard, the oxen steers being put together, and once a day I feed all my cattle intended for beef, from two to four quarts of oats and corn ground fine, cob and all together, say one part of oats to two of corn in the ear ground together. By this mode, I gain three or four weeks on my neighbors, who neglect it, for it prevents the young grasses acting too powerfully as a physic, which without some preventive, I have observed will sometimes last for three weeks, and cattle would fall away. After the grasses have grown and become solid, I slacken the feed and salt them oftener, and by the first of June omit feeding altogether, but continue giving salt plentifully † I have by these means generally turned off my beef cattle early, and at little expense.

The other subject I would recommend to my brethren of the plough, is the manner which has proved easiest and most successful, in destroying one of the worst pests that infests the most of our farms, the elder. They generally grow along fences and ditch-banks and such places, out of the reach of the plough. I have destroyed many large bunches, by whipping them down two or three times. If they are of more than one year's growth, I wait till they begin to blossom, when I take a pole, and beat them down, young and old, as close as possible to the ground, and repeat the operation in August, if they sprout much. If they are sprouts of one season's growth, I leave them till about the time the older ones blossom, and then beat them down; being tender and full of sap, they are easily beaten down, and the most of them perish by discharging from the wounds.* In some cases, I have had to go over them the second year, when they generally disappear. If there is any easier and better mode of subduing them, I should like to know it. Has the elder berry ever been converted into any valuable purpose? Sir, I have hastily and imperfectly made these remarks, and if there is any thing in them worthy of a place in your publication, you will be good enough to put it in such a form as you think proper, and publish so much (if any) as you may think proper. I profess to be nothing but a plain farmer, and one wishing to promote the best interests of our profession, and that will promote and perpetuate the best interests of our common country.

Respectfully yours, SIMEON M'COY.

Parpacoten, June 9th. 1835.

QUERIES—ILLINOIS PRAIRIES.

Princeton, Putnam co., Ill., March 20, 1835.

JESSE BUEL—Sir—We have procured ten subscribers for the Cultivator; inclosed is a five dollar bank note, which I suppose, agreeably to the statements in your prospectus, will entitle me to an additional copy. Our settlement being new, and not very densely populated, the list of subscribers forwarded herewith, is as large as we could conveniently obtain at present. One very important item of instruction which we hope to obtain, consists in the art of making live fences. This is a country in which we must resort to hedging, in consequence of the scarcity of timber, and the utter lack of materials for stone fence. As to materials which have been recommended and used for hedging, we have the crab apple and the common thorn, (Crataegus crus-galli Ph.) or c. punctata, as Eaton has it, on the authority of Willdenow. Dr. Darlington says this species is extensively used in New-Castle co., Del., and when properly managed, makes a very substantial hedge. We have also the honey locust, (Gleditschia triacanthos;) but I find the size it attains in our soil and climate, is generally considered an insuperable objection to its being used for a hedge, though I have seen no one who has made a fair trial of it. We perceive you propose giving us a wood cut occasionally in the next volume; we hope you may be enabled to illustrate the manner of training hedges in that way. We should like also to see cuts of improved farming implements, particularly the revolving rake. I might fill out a sheet in enumerating the various matters in which we need instruction, but will trouble you with only one thing more, and that is the cultivation of grasses;—not merely of timothy and clover, but all the various kinds which are considered valuable in American husbandry. The time and manner of sowing—soils adapted to each kind—comparative value for hay or pasture—method of preparing such kinds of seed as do not readily vegetate, and where the seed may be obtained.

It may not be amiss to give you a brief description of our soil. The surface of most of our prairies is gently undulating. The slight elevations form the first kind of arable land. The depressions seem fitted by nature to collect and carry off, though very moderately, the surplus water; most of them having no channel for it

* We would suggest, that a yard is better than a field for winter feeding and littering stock, and a barn, shed or barrack better than a stack for securing hay. If cattle are fed from a stack in a grass field, the sole of the sod is broken, the ground badly poached, the manure virtually lost, and the fodder wasted. All these evils are avoided by feeding in a yard, particularly if the stock are fed in mangers, under cover. They may be tied while feeding on hay, and loosened in the day time, while feeding on the straw litter in the yard. The saving in manure and fodder, the great materials of fertility and profit, will far more than compensate for extra trouble and expense.—*Conductor.*

† We beg leave to repeat our recommendation, to give cattle access to salt daily, and we do it after having pursued the practice for a dozen years, with high satisfaction. Salt is of the same use to beasts as it is to man—it is a healthful condiment—a preventative, and often a cure for disease. Man finds it most congenial to these ends, and most grateful to the palate, when taken with his daily food—and it is no less so to dumb animals. When permitted free access to salt, farm stock never take it in excess, and consume but very little, if any more, in a season, than when given to them once or twice a week. We learn from a work now before us, that in Spain, they attribute the fineness of the wool to the quantities of salt given to sheep; that in England 1,000 sheep consume at the rate of one ton of salt annually. Our practice is, to have salt troughs under our cattle sheds, where they are secure from rain, and to have salt in them, accessible to the farm stock, at all times.—*Conductor.*

* A good method of destroying the pests of the farm, whether shrubs or herbaceous plants. The cause of success may be thus explained: When the plant is in blossom, it contains the greatest volume of unelaborated sap, and is in most immediate want of food to sustain its flowers and fruit But before this sap can become food, it must be elaborated in the leaves, and if the leaves are at this time destroyed, this cannot take place, and the plant dies for want of sustenance. The leaves are at this time as essential to the plant as lungs are to the animal; and although the plant may survive defoliation the first summer, it can seldom withstand a second or a third.

to occupy. They are covered with coarse kinds of grass, mostly of the cyperoideae family, which grow very thick and tall. They are in some places quite narrow, in others their breadth extends to several rods, and they are not unlike, in a superficial view, the moist margins of some of the rivulets in the level parts of the state of New-York. They are here called sloughs, (our western people pronounce it as though it were spelled sleugh,) and are uniformly moist and miry, except in the severest droughts. Our soil is clayey, containing a very large proportion of vegetable matter, having an average depth say of eighteen inches,—its color is nearly black. By some it would perhaps be termed a vegetable mould, its earthy parts being aluminous. It rests upon a subsoil of clayey loam, of a yellowish color, or in other words a mixture of very fine clay and sand, colored probably by the presence of a very small portion of carbonate of iron. The difference between the elevations and the sloughs, consists principally in their being drier,' possessing a smaller portion of decomposed vegetable matter, and having less depth of soil—the sloughs often being two or three feet deep. I am confident that by slight draining, perhaps by the aid of a single furrow, made near the middle, to carry off the water which settles in the hollows between the bunches of roots, (or to use a rustic technical, as good perhaps as any,) tussucks, they might be rendered first rate meadow lands, provided we could once get the right kinds of grass started in them. In this region of country, which is below the rapids of the Illinois river, the upland prairies are on an elevation of from fifty to eighty feet above the beds of the large streams, which elevation terminates in most cases by an abrupt bluff, descending into the bottom lands. Such is the character of the Illinois prairies. Some of them are more undulating than others, and such are generally preferred by the settlers. Those which approach nearest to a level, are frequently interspersed with small shallow basins, separate from the sloughs just mentioned ; but as it respects herbage and soil, of a similar character. In short, our prairies preserve a great uniformity as to soil, and it is not lacking in fertility. The main point, therefore, seems to prevent its deterioration by good husbandry.

JOHN M. GAY.

REMARKS OF THE CONDUCTOR.

We are yet without much experience in the management of live fences, and public opinion is altogether unsettled as to the plants most suitable for them in our climate. Gen. Derby, of Salem, Mass. has succeeded in growing a good hedge of the buck-thorn ; in Pennsylvania and Delaware there are good hedges of two species of native thorn, which Caleb Kirk denominates the cockspur and Virginia thorns, the first sometimes termed the New-Castle, and the latter Washington thorn. Farther south, the red cedar is highly recommended as a proper plant, especially by the late John Taylor ; in the western part of this state, there is represented to be good hedges of English hawthorn, (Cratægus oxyacantha) ; and we are experimenting with the honey locust and elm, and hope to succeed, though the result is yet problematical. In Flanders the beach is extensively employed. We have in this vicinity several species of the cratægus, which seem better suited to our climate, and we think for hedges, than the species of the south ; indeed, we should always advise the use of plants that are indigenous, in preference to those which are exotic. We have a tolerable good hedge made from these, the plants having been taken from the woods and pastures, and the species promiscuously mixed. It is clipped in June, and is annually improving. We are more in want of experience in managing hedges, and of patience in waiting their growth, than in suitable plants for them. Many persons object to the making a trial for the reason that others offer for not planting fruit trees—*they may not live to enjoy their benefit.* We have no doubt the wild crab, and also the various species of our native thorn, will make good hedges, on soils congenial to their growth. We intend to give a cut ere long, to illustrate our method of training a honey locust hedge. We will also shortly give, in a tabular form, the results of Sinclair's observations and experiments in relation to the most approved grasses.

Our list of cultivated grasses is small. The clovers, lucern, timothy, herdsgrass, orchard and tall oat, constitute the grass catalogue of our most respectable seed shops. It is only by trial that we can determine the relative value and fitness of these for different soils and climates ; and we would rather invite, on this head, the observations of experienced farmers, than promulgate our own crude notions. The clovers, timothy and herdsgrass seem in a manner indigenous in the eastern and northern states, and our opinion of the orchard and tall oat, is greatly in their favor as pastures grasses. It is highly probable that there will be found in the west indigenous grasses, which, under culture, will prove valuable to its husbandry. We have heretofore received the seeds of several wild grasses of the west, some of which are now growing with us ; but we have as yet been unable to decide upon their value here, much less for the rich and peculiar soil of Illinois.

We design to continue our illustrations of implements, &c. but prefer selecting those which are common property, which every man may make or procure made. Cuts of patented machines, that are worthy of public patronage, will be cheerfully inserted, where the owner chooses to pay for the engraving.

CORN—APPLICATION OF LIME.

Mannington, Salem Co. 6 *mo.* 17, 1835.

Respected Friend—I did not intend thus long to have delayed acknowledging the receipt of thy acceptible letter, but in one way or other have been diverted from it. The corn reached me in due time, though a delay of some days must have attended it at the office in New-York. The grain is not so large as the kind we plant, but it will no doubt weigh heavier to the bushel, and is the most on the flint of any I have ever seen. I planted it in some new ground about the 25th of last mo.; it has been harrowed both ways and in a few days will be large enough to plough. Whether it will gradually or speedily assimilate with the corn of the neighborhood, I cannot tell, but knowing the tendency of every kind to mix when planted in rows contiguous, I reserved a small portion of it, and about ten days since, turned in some clover and planted it, where it will have no chance to do this. The ground was marked out 3 by 3, and I should think the soil in a good state for a crop. The farmers complain, many of them, of their corn not standing well ; many fields near me have been injured by the grub and wire worm, and the birds too came in for a share ; having tarred mine well, and rolled in plaster, it has scarcely received any injury, and the process of thinning will have to commence shortly. My wheat, especially that part of it which was sown after corn, is very promising, though I fear it is too large, for the rains which will be likely to ensue between this and harvest. From experiments I have made, I am more and more inclined to change my mode of farming, and give up the oats crop entirely. I think it an exhausting one to the soil, and from its tendency to lodge, where the season is favorable, is often a troublesome one. About 30 loads of upland and meadow hay, the straw from about 30 acres of wheat and oats, and the fodder from about half that quantity of corn, are mainly my resources for manure. This I intend to put on the corn ground, with about 40 bushels of lime to the acre, and to proceed in this way till the farm has had a coat of the latter. I feel however, at a loss to know how this should be applied, as a contrariety of views appear to be held out by different writers. From some of them you might infer that it made but little difference when lime was put on, so that you get it on some time in the year, and that the effect was complete when combined with manure ; from others, that it should always precede manure when breaking up old lays for cultivation, &c.—that it is injurious, when mixed with any common dung, tending to render the extraction insoluble ; that when laid upon the land during the same season, the dung should be ploughed down alone, and the lime afterwards harrowed in with the seed furrow. This last seems to be the point, but "British Husbandry" is appended to it, and though it detracts nothing from its merit, yet we are liable to be misled by foreign practices, which are not always adapted to our climate. I should *wish* to plough in my manure in the spring, and a short time before planting, lime and harrow it in, *provided* it would be *advisable* to do so. One of my neighbors told me he thought he was 200 dollars out of pocket from having limed his wheat ground last fall ; he put on about 60 bushels to the acre, and I think, shortly after, put on his manure and turned all down together, harrowing his wheat in. He probably put on too much lime, but from what I have observed, should think it best not to lime the wheat ground at all—I mean just before you sow. It would seem to be best to have the lime well incorporated with the soil by the tillage of a previous crop, and for this corn is well adapted. This plan I pursued a year ago, but did not manure the corn ground, but reserved about half the usual quantity for the wheat, which was sown about the 22d of the 10th month, and is now equal perhaps to any in the county. I took the pen to say how much I felt obliged for the corn ; this might have been done in a few words, and some apology is certainly due for thus encroaching on thy time ; I have done it from a desire to obtain in a future number of thy "Cultivator" information on the subject alluded to. I read what I can get hold of on agricultural subjects, but books containing the desired information are not always to be found, and in the words of a great writer, "to search is not always to find."

Very respectfully thy friend,
WM. CARPENTER, Jr.

REMARKS.—We confess ourselves destitute of much practical knowledge in regard to the use of lime, and, as our correspondent observes, authorities are too contradictory to be fully relied on. Our limited experience has however taught, that it is worse than folly to apply it with barn-yard manures, either conjointly or separately, the same season. We gave a dressing of caustic lime

and dung to a corn crop during our noviciate in farming. The corn grew well in the outset, but before the ears had formed, the prospect was blasted: its growth was checked and the product trifling. Caustic lime is a powerful solvent, and brings on a too rapid decomposition not only of dung, but, in light sandy soils, of most of the vegetable matters which it meets with there. Lime should be applied separately upon all soils, and sown upon an old tenacious sod, is often useful in expediting the rotting process. Quick lime becomes effete, i. e. is converted into carbonate of lime, in a short time after it is applied to the soil; in which latter state its presence in soils not already abounding in it, is highly beneficial in the economy of putrescent manures; and these may be applied with increased advantage on land dressed the preceding year with quick lime.

COB MEAL.

Shrewsbury, N. J., 6th Mo., 27, 1835.

JESSE BUEL,—Respected Friend—From the favorable observations of intelligent persons relating to the use of corn and cobs ground together as food for cattle, I have had a cast iron mill recently put up for the purpose of crushing them. Not having noticed any remarks on this subject in the Cultivator, I shall yet be glad to avail myself of thy experience and judgment as to the best mode of preparing and feeding such meal. I do not wish the pages of your useful paper occupied with that which is interesting only to myself or to a few of its readers—but if the use of the corn cob as food for cattle is of sufficient general interest to give an article upon it, I for one, shall be gratified to learn if it be better to grind them alone with the corn, or to mix oats in the hopper, should the meal be fed dry, or wet, separately, or mixed with, cut hay, cut straw, or cut stalks; at what times and in what quantities?

A pretty extensive feeder for the Philadelphia market once told me, that a bushel of meal made of corn and cobs was quite equal to a bushel of meal made of corn and oats, that his cattle throve as fast on the former, and that they never stalled (cloyed) on it.

I use the present opportunity to bespeak a sufficient quantity of thy "*Dutton*" seed corn to plant 12 acres the next season, say 2½ bushels shelled. With much respect, thy friend,

ROB: WHITE, Jr.

In confirmation of the great economy in *preparing* food for animals, one of the aldermen of New-York city told me, that at their public yard, (where the previous year they had fed out hay and oats whole) by the cutting of the hay and grinding the oats 8 bushels of oats and 15 cwt. of hay fed the same number of horses, doing the same work, the same length of time, and kept them in as good order, as 24 bushels of oats and 35 cwt. of hay had done when fed whole!! R. W. Jr.

REMARKS OF THE CONDUCTOR.

The cobs of corn undoubtedly contain much nutriment. P. Minor, of Virginia, [*see Am. Farmer, Vol* 1, *p.* 324] has given us the results of a nicely conducted experiment to ascertain the amount of this nutriment. He took ten bushels of corn and cob, weighing 367 lbs. and ten bushels of shelled corn, and subjected them to the process of distillation. The product of the corn and cob was 13 gallons of spirits and of the pure corn 18 gallons Estimating that the ten bushels of corn and cob would have given five bushels of shelled corn, which is the general proportion, there will be left, as the product of the five bushels of cobs, four gallons of spirit, or nearly half as much as was afforded by five bushels of corn. Mr. Minor remarks that the cob affords other nutritive matter than the saccharine, which is converted into alcohol, as mucilage and oils. We have besides abundant testimony, in the practice of eminent farmers, of the utility of feeding cob-meal to animals, always mixed we believe, with meal of the corn or oats. Cob-and-corn-meal is improved by scalding, still more, for hogs, by boiling, with potatoes, apples and pumpkins, and yet more by partial fermentation. All these preparations facilitate digestion. An animal high fed with raw grain, whether horse, hog or ox, voids much of its food in an undigested state, which is of course lost for all beneficial purposes. Grinding grain for animal food, therefore, is universally admitted to be economical, and cooking and partially fermenting it, it is no less true, further enhances its value for swine. Even the water in which it is cooked augments its nutritious properties, in consequence, probably, of some chemical change effected by the boiling operation. Fish subsist in pure water, as is strikingly illustrated in the management of the gold fish. The experiments of the Rev. H. Colman, in fattening swine, further warrant this operation. "At first," says this nice observer, "we employed half a bushel of Indian meal to make a kettle full of hasty pudding; but we soon found that a peck of meal, by taking up all the water it could be made to absorb, in a thorough boiling, would make the same kettle full (holding five pails) of sufficient consistence." In giving cob-meal to horses and neat cattle, that are fed with cut hay or straw, there is a double advantage, at least so it is stated by those who are well experienced, in feeding the grain and hay together. The grain, especially corn, is sometimes too heating to horses, and this tendency is counteracted by the stimulus of distensions, afforded by the hay and straw. Mixed feed of this sort may be fed thrice in 24 hours. It is eaten in so short a time as to afford much beneficial rest to the animal. We would call the reader's attention to the facts stated in Mr. White's postscript.

CIRCULAR.

Addressed to the Raisers, Inspectors and Consumers of Hops.

At a meeting of the Brewers of the state of New-York, convened in the city of New-York, 6th March, 1835, to take into consideration the causes of the present ruinous and improper practice of picking, curing, and inspection of hops, by which a very large proportion are rendered worse than useless, and others materially injured, a committee was appointed, and their chairman made the following report:

In presenting this communication, it is unnecessary to make any other remark to those interested, than to refer to the important facts that are here disclosed, to shew that prompt and efficient measures ought to be taken, to effect a radical change in the present system of picking and curing, as well as a corresponding change in the standard of inspection of hops.

We ask the patient indulgence of brewers, farmers, and inspectors, for the liberty we shall unavoidably be compelled to use, in pointing out the errors that have been fallen into. Your committee are aware of the great difference between persuading a man of the truth of any new proposition, with that of convincing him he is wrong, and satisfactorily inducing him to take the way of truth. We know we have one difficulty to contend with, to surmount which, we are apprised will require not only all our ingenuity, but also all the forbearance of those concerned. This difficulty is the ready sale of hops in our market, in the imperfect condition they are now produced. The farmer would naturally enough ask why all this clamor about lupulin, resin, early and late picking, while we can get 16c. per lb. and 2,000 lbs. per acre, (near $320 per acre,) per annum? This is all fair enough, and we will further admit, that some individual, who may ask this question, has himself produced hops worth the money, and as good an article as either this or any other country is capable of producing; but our complaint is that there are but very few of this fine quality, not one bale in ten. We think we speak advisedly, when we repeat, that out of the 8,500 bales, the produce of New-York and the eastern states, there may not be more than 3 or 900 bales in prime order. That we may be perfectly understood, we earnestly solicit a careful perusal of an analysis of hops by Dr. Ives, of New-York, and published in Silliman's Journal of Science, 2d volume. Since which, the attention of many of the first chemists and physicians, French, Scotch, and English, have carefully experimented on them, and the result has been nearly the same. In one *essential particular* they *all* agree, which is, that the only valuable properties are contained in the resinous globules, which Dr. Ives calls lupulin. These globules are not formed until a few days before the hop is ripe, and if picked either a few days too soon or too late, the hop is an injury instead of being of any service, as they possess neither preservative nor medicinal qualities. The experiments of Dr. Ives are so nearly correct, and as he merits the gratitude of his countrymen for his labor and skill in first bringing these matters before the public, we will copy a part of them, that they may be the more extensively known, and hope the valuable and important facts they disclose, may have their just influence in correcting the many errors that have obtained, in the picking, curing, and inspection of hops.

EXPERIMENTS:

"Two drachms of leaves of the blossom of the hop, from which all the lupulin or farina had been separated, were digested twelve hours in six ounces of boiling water. The infusion was bitter, and exceedingly unpleasant to the taste; it possessed none of the aromatic flavor and peculiar bitter of the lupulin. When filtered and evaporated, it yielded five grains of nauseous extract.

"The same leaves were again digested in six ounces of proof spirits; after twelve hours, the infusion was filtrated, and, by evaporation, yielded five grains of extract similar to the last. The same leaves were digested twenty-four hours in alcohol: the infusions manifested none of the sensible properties of the hop; it gave, by evaporation, four grains of extract. The taste of none of the extractive matter obtained from the leaves, was sufficiently characteristic of the hop, to designate that it was obtained from that article.

"From this and other similar experiments, leading to the same results, I think it is conclusively proved, that the virtue of the hop resides exclusively in the lupulin; that the leaves contain a nauseous extractive matter, which is imparted to water and to alcohol, and which, instead of adding to the bitter and aromatic flavor of the lupulin, partially neutralizes or destroys it.

"The obvious inference from these results have, as I conceive, been demonstrated,—that the lupulin alone, contains the bitter principle and the aromatic flavor of the hop, which are essential to the excellence and preservation of malt liquor."

These dicoveries of Dr. Ives, immediately brought the attention of M. M Payen, and Mr. Chevallier, two of the most eminent che-

mists of France, to this subject. The learned compiler of the Materia Medica, Brewster's Endinburgh Encyclopedia, Doctor John Bostock, M. D., F. R. S., Dr. Paris, an able, profound medical writer, all agree that the lupulin is the only valuable part of the hop; and Dr. Paris particularly mentions the hop, as the most valuable ingredient in ale, its stomachic qualities powerfully aiding digestion, "and particularly useful to the lower classes, enabling them to digest their innutritive food;" he says "Dr. Franklin was wrong in condemning ale," and deprecates "the disappearance of small beer from the tables of the rich, as there was nothing to replace the tonic of the hop."

From the above authorities, there is one certain fact established which proves, conclusively, that the leaves forming the pod of the hop, contains nothing of value for the purpose of brewing; an acrid, nauseous bitter, the only properties they possess.

In looking back to the qualities of hops the market for the last fifteen years have furnished, our opinion is, that the standard has gradually deteriorated; many are now branded firsts, which have been picked before the resin had began to form in them, and a very large proportion of those branded firsts, are picked before the hops are ripe, and the resin or lupulin but partially appearing, being only sap, as soon as dry it is dissipated, and very shortly after, not even the smell of the aroma is perceptible.

This principle error of picking hops before they have arrived at maturity, is followed by another, as far as it goes, equally pernicious; using brimstone to give them the appearance of maturity,—hence our markets are furnished with first rate hop pods or leaves, without any lupulin, possessing only the nauseous, acrid bitter, of unripe vegetation, and charged with sulphuric acid, the most deleterious matter to a vinous fermentation.

Various circumstances have combined to bring about this lamentable state of things. The inspector is not the principal in fault for branding as firsts, those which are *refuse* from early picking and brimstone. This error no doubt had its origin with mistaken men conducting the brewing business, and ignorant of either the culture, curing or their essential properties. These men wanted hops that would impart no color to their liquor, and advised the inspectors, that hops when ripe, were refuse, because when ripe, the leaves forming the head of the hop, accquired a brown or yellow tinge, slightly coloring the ale; consequently the inspectors have branded those hops *firsts*, which are gathered *green*, before the lupulin is formed in them, and from this ill advised source brimstone has been introduced and applied to both early and late picked hops; to the early, to take away the green, and to the late, to take away the brown color, and bleach them all to the imaginary pale ale standard. By this pernicious course the rinds, if we may so term them, are substituted for the fruit, and for the wholesome aromatic resin, we are presented with an acrid, unhealthy bitter.

Another cause may explain why our markets are yearly retrograding, which is, the early demand for shipping, or a scarcity among the brewers; hence often enormous prices are paid for trash, not worth the cartage for manure. This early demand makes numbers eager to avail themselves of the chance of advanced prices, and the first sales, while they run no risk of the inspectors condemning them, from early picking. The farmers also find their interests served in early picking, as it gives a much longer time for harvest, enabling them with but trifling help, and less kiln room, to secure their crop; and can we blame them, while brewers and inspectors second their wishes?

We have no personal feeling, nor intend attaching censure to any individual; but insist that our present standard of inspection is an imposition: it does not indicate the maturity or intrinsic value of the hops. To be a competent judge of hops, requires experience, and a nice discrimination; it is impossible for any man to decide, correctly, unless he is capable of distinguishing every peculiar odour that hops may have; his sense of smell must be acute; it is not enough that the hops are dry, that they look well on the outside, that they have not been heated, smoked, stewed, brimstoned, or burnt; they must have the strong, pungent, aromatic smell of the hop when ripe, and just plucked from the stem; they must have the small globules of resin or lupulin, like gems surrounding the cove of the pod, and covering the bottom of the calyxes or leaves; without this lupulin, they are refuse. All which is respectfully submitted. L. FIDLER, *Chairman.*

Resolved, That this report meets the approbation of the trade.

R. BOYD, *President.*

M. VASSAR, *Secretary.*

The above report was transmitted to the brewers of Pennsylvania, and the following gentlemen were appointed a committee, who concurred with the brewers of the state of New-York in the adoption of the above report. *Philadelphia, June* 18, 1835.

GEO. PEPPER,	ABBOTT. NEWLIN & Co.
FRED'K GAUL & SONS,	FRANCIS & W. J. PEROT,
SAM'L N. GRAY,	M. L. DAWSON,
HUTCINSON & STUMP,	THOS. C. LUDERS.

[We have received for publication, the circular of the Pennsylvania brewers, which we deem it unnecessary to insert, as the opinions it expresses accord with those in the preceding circular.]

REMARKS OF THE CONDUCTOR.—We cheerfully give insertion to the above communication, as containing matter worthy the notice of farmers, particularly of the hop grower. And we beg leave to suggest to the worthy fraternity of brewers, as the most ready and efficient means of improving the hop culture, the propriety of offering liberal premiums for the best samples of hops that shall be exhibited at the Albany October Fair. This is a great hop market, and the crop will then be mostly ready for sale. It will be the means of congregating together the growers, buyers and inspectors; of instructing all in the criteria which indicate the first quality; of demonstrating the relative value of good and bad parcels, and of curing their crops. Let a judicious committee be appointed, to decide on the relative merits of the parcels shown; to point out defects, explain the causes of them, and to report facts, with directions for managing the curing process. All parties would be benefitted by the arrangement here recommended.

QUERIES.

JESSE BUEL.—Sir—The Oneida Agricultural Society has not yet been organized, but the subject is under consideration, and we wish to submit to you the following inquiries, viz:

1st. Are the enterprising farmers of Oneida County either directly or indirectly interested in the formation of such a Society?

2d. If so, upon what plan should it be organized?

3d. Should premiums be awarded or not?

4th. What is the organization of the State Society, who are its officers, and who are its members,—what has it already done, and what does it intend to accomplish—in short what is its whole history?

5th. In what counties have Societies been formed, upon what plan, and who are their officers?

6th. How should a young and inexperienced farmer proceed to bring about the formation of an agricultural society in this county, and will you not assist him with your pen at least?

The Utica papers are respectfully requested to insert the above inquiries, and Judge Buel's reply to them.

Vernon, June 21, 1835. ONEIDA.

ANSWERS.

1. Not only the *enterprising* farmers, but the entire population of a county, are interested in the formation of agricultural societies. Agriculture constitutes the main source of our wealth and social comforts: and the general prosperity of any community is increased or retarded as this flourishes or languishes. In our young days, we remember to have heard the fertility of Oneida highly and we believe justly extolled; but in our frequent rambles through it of late years, we have been impressed with a belief, that most of her farmers adhere too closely to the practices of the primitive settlers.—forgetting, apparently, that the system employed to subdue the forest will not always serve to perpetuate the productiveness of the soil. While some of our counties, say Dutchess and Orange for instance, have, within thirty years, doubled or trebled their agricultural products, by an improved mode of farming, Oneida has remained nearly stationary in her husbandry. Wheat is no longer her staple product; and the economical management of manures, alternation of crops, and a judicious system of draining, three great sources of improvment and profit, have seemed either not to have been properly appreciated there, or if appreciated, not to have been duly practised. The object of agricultural, like other associations, is to concentrate the energies of many for a common benefit;—to introduce the improvements which are constantly making in this as well as in other branches of industry, and thereby to increase the profits of agricultural labor, and the comforts and moral health of society. For these reasons, we are free to express an unqualified opinion, that the formation of an agricultural society in Oneida would be beneficial to every class of its population.

2. The more simple, to answer useful purposes, the better the organization. The constitution and by-laws of existing societies afford good models.

3. Premiums confer honorary distinction as well as pecuniary reward; and these constitute strong inducements to industry and useful exertion. Where they are bestowed, as they should be, for discoveries and improvements which are calculated to benefit a community, their public utility cannot be doubted. The premiums of the agricultural society of Scotland have been a principal means of the unprecedented improvements in her husbandry. And the premiums bestowed by Napoleon did more to improve the arts, in France, than had been effected for a century previous: they called forth the energies

of the human mind, the great lever which aids, abridges and supersedes human labor.

4. The *organization* of the State Society is very similar to that of a county society; the names of its *officers* will be found in No. 1 of the present Vol. of the Cultivator; its *members* amount to one hundred or more, belonging to different parts of the state—they are required to pay an entrance fee of one dollar, and an annual contribution of two dollars, and are entitled to the publications of the society. These contributions, with about an equal amount from the avails of the Cultivator, constitute the funds of the society, and are sufficient to defray its ordinary expenses. Its benefits have not been equal to the wishes of its members, or their hopes of the future. It has however done much to diffuse useful information, particularly through the Cultivator, which is exclusively devoted to the interests of the farmer—15,000 copies of which are printed monthly. It gave, probably, the first efficient impulse to the silk culture among us, by the gratuitous distribution of mulberry seed in all the counties of the state, and by calling the public attention to this branch of rural labor. It has endeavored to induce the organization of county societies;—and to direct legislative attention to agriculture, as the primary interest, the great business of the state, and as especially entitled to the fostering care of the public functionaries. Persuaded that the prosperity and happiness of a people depend not so much upon the learning and wealth of a few, as upon the intelligence, domestic virtues and independence of the many,—it has petitioned for a participation in the public bounty, for the establishment of schools for instructing young farmers in the higher branches of learning,—of imbuing their minds with those principles of science which have a controlling influence in every branch of human labor, and of instructing them, thoroughly, in the practical operations of the farm. But as the society had neither political influence, nor personal considerations, the tenders which seem to possess the greatest intrinsic value, to offer in exchange for what they deemed common justice, the prayer of their petitions was unheeded, and almost unnoticed. They then applied for common corporate privileges, seldom denied to any applicants, to enable an association to establish a school of theoretical and practical agriculture. This also failed, or we should probably, ere this, have seen the stock taken up, and preparations making to put the plan into efficient operation. But though the society has been crossed by disappointment, and depressed by apathy, it has neither abated its wishes to do good, nor its hopes of ultimate success. When its motives are better understood, and the advantages, which may result from its labors better appreciated, the expectation is indulged, that a more liberal policy towards the society and its plans, will be manifested both by the legislature and the community at large, and that its labors will result in much good, in the political, moral, and pecuniary improvement our state.

5. Agricultural societies are believed to exist, or have recently been organized, in the counties of Jefferson, Monroe, Onondaga, Oswego, Rensselaer, Columbia, Albany, New-York, Essex and Clinton. And it may not be irrelevant to add, that in Massachusetts, Ohio and Indiana there are numerous societies, sustained in part by legislative patronage, and that in most of the other states societies are multiplying, with encouraging prospects of public usefulness. We are not in possession, at present, of the plans of organization, or of the names of the officers, of the county societies of our state, though we doubt not both may be readily obtained, by consulting the agricultural journals, or by applying to the post masters of the county towns in which they have been organized.

6. We advise, in reply, to the last query, that the "young farmer" should draw up a caption for an association, obtain to it the signatures, and enlist in the project the feelings and the services, of a dozen or twenty, or more, kindred spirits; adopt a constitution and by-laws; and under a consciousness that he is not only doing a certain good to himself, but benefitting his neighbors, let him and them resolve not to remit their reasonable exertions till they have accomplished their object. Though there may be many members, few manage are most efficient in organizing and sustaining a society. Where the responsibility rests upon all, none are willing voluntarily to assume it. Should this recommendation be followed, "Oneida" may count freely upon the aid of our pen.

THE FOOT ROT.

The following remedy for the *foot rot* in sheep, I believe has not before been published: it is considered an effectual remedy against that troublesome complaint, and has hitherto been sold for $5 per receipt. I have used it this present season to remove the complaint in a flock, which last year had it so severe, that I lost many of them, and on which I exhausted every remedy, ever heard or read of, without effect. Two applications has entirely removed the complaint.

3 qts. alcohol, 1 pt. spts. turpentine, 1 pt. strong vinegar, 1 lb. blue vitriol, 1 lb. copperas, 1½ lbs. verdigris, 1 lb. alum, 1 lb. salt petre, pounded fine; mix in a close bottle, shake every day, and let stand for six or eight days before using. Also, mix 2 lbs. honey with 2 qts. tar, and after paring the hoof diseased, apply the compound, then put on the tar and honey. S.

TICKS ON LAMBS.

J. Buel, Esq.—Sir—In your last number, I noticed a method of destroying the ticks on lambs. I have for several years adopted the same means, only I have added a small quantity of corrosive sublimate, which is still more effectual; and also in connection with the tobacco, a preventive against the scab. But I have pursued a different method in applying the compound from that of Judge Bostwick, which is to boil a sufficient quantity of tobacco in a potash kettle, adding when hot the corrosive sublimate, say 1 lb. to 300 sheep. Put out the fire, and when sufficiently cool, I erect a platform on one side of the kettle, so constructed, that after plunging the sheep and placing it on the platform, the liquid will all run back into the kettle, I then press it out of the wool. I have been in the habit of applying the wash to all my sheep, young and old, as it will destroy the nits, and the sheep made healthier and the quality and quantity of wool perceptibly increased. Three men in this manner, one to catch and the others to plunge the sheep, can wash 500 in a day. S.

Nelson N. Y., July 21.

ON AGRICULTURAL IMPROVEMENT.

Plainfield, Mass. June, 1835.

Among the many objects upon which great improvements are made at the present day, it is cheering to consider that agriculture is also receiving much attention. True it is, that this is a subject which has been too much neglected. We have followed our predecessors. As our fathers and grand fathers did, so have we done. We have long followed them in their steps, without ever supposing that their ways could be altered for the better. And it is astonishing to consider that while enterprise is the great characteristic of the Yankees, they have remained so long satisfied with travelling in the steps of their forefathers. But so it is, at least so it has been in this part of the country. But while some yet continue in the practice of their forefathers, others have left their tracks, and are now beginning to make experiments for themselves. The method of cultivating the soil that has been practised in this vicinity, that was handed down to us by generations that have gone before us, and which some of our farmers yet continue to practise, is the following: In the first place, a man to be called a farmer, must have a large farm. This is divided into lots for mowing and pasturing. The pastures are left to take care of themselves, and since they were cleared, have seldom or never been disturbed by the plough. Of course they now produce but very little, and that not of the best quality.

But this is good husbandry, compared with the practice of many of our farmers, with their mowing lots. With one class of our farmers, it has been the practice to till far too much land, and that quantity of manure that ought to be put on one acre, is put on three. After planting several seasons, it is sown with some kind of grain, without manure, till the soil becomes exhausted to such a degree, that it hardly compensates the laborer for his toil. It is then thought to be in a good condition to put to grass.

This is one instance of the mismanagement of farmers in this region, and the natural consequence is, that land has greatly decreased in value. Many farms have been worn out to such a degree, that the owners have been under the necessity of removing to the more fertile lands of Ohio. But though most of the farmers have for a long time practised this method of their forefathers, though their minds for a long time have been prejudiced against every thing contrary to what their predecessors taught them, yet it is pleasing and cheering to witness, notwithstanding many continue to practise the old methods, that some are laying them aside, and beginning to act with unbiased and unprejudiced minds. It is truly gratifying to witness the improvements that are made at the present day in agriculture, and though we do not expect to plant and hoe, or raise our crops by steam or water power, yet we believe improvements in agriculture have but just commenced. It is gratifying also to consider how much is written at this day on this subject: how many periodicals are published and distributed in our land, when but a few years ago such a publication could scarcely be found. And it is cheering to see, that such publications are now read by many with unprejduced minds. The time has been, when if a person read a periodical on this subject, and was influenced by it to deviate in the least from the customs and practices of his forefathers, he would be despised and ridiculed. I have seen the man, who, when told by his more enlightened brother farmer, his method of raising corn, would sneer at him for getting his opinions from the newspapers.

But how strange it is, that the farmer has remained so long deluded; how strange that they have remained so long blind and

deaf to the writings of those who have examined the subject, and whose object in writing has been to benefit them.

The divine must spend years in studying the bible, and in examining commentaries upon it, before he is qualified for the duties of his office. The lawyer must spend years in study, before he is capable of pleading at the bar. The physician must spend years in studying and examining the writings of others, on the treatment of diseases, before he is qualified for attending to the sick. But many a farmer supposes he can be taught nothing with respect to cultivating the soil. He has already the art to perfection; and he would almost as soon think of putting a rattle snake into his bosom, as to read on this subject. But the times are fast changing; books and periodicals on this subject are now read by many without prejudice. Those that cultivate the soil, are now rising from the degradation in which they have so long remained. Formerly it was thought that farmers were wholly unfit for any thing except to till the soil, and they were considered the offscouring and the dregs of mankind. But at the present day, the farmer is fast rising to respectability and he now fills places in society, for which he was formerly thought wholly unfit. Formerly it was thought, if he could read, write, and say the multiplication table, it was all that was necessary for him to know. Not a year ago, a young man applied to his father for permission to attend a select school, then kept in the town in which they resided. Ah, said his father, I would not have you attend that school for a thousand dollars. The reason was because he thought learning worse than useless for the farmer.

But these dark ages with respect to agriculture are rapidly flitting by us; and the sun that has been so long hid in clouds and darkness, is now breaking forth in its meridian splendor, dispelling the fogs and mists in which our land has so long been enveloped.

J. A. B.

TO DESTROY THE CANADA THISTLE.

Cut them off near the ground, when they are full in the blow or a little past. This process I have tried for three years, and find that it entirely eradicates them from the fields by once mowing. I have noticed several modes of destroying this noxious weed in the Cultivator, but find none attended with so small expense as mine, which has induced me to send you the above.

SOLOMON W. JEWETT.

Weybridge, Vt. July 23, 1835.

Remark.—In confirmation of the above, we can state, that in 1834, we unexpectedly found a quarter of an acre of rank thistles in a piece of grass ground recently laid down. They were in full bloom when the grass was mown. The present year, the number was apparently diminished five-sixths and what remained were stunted dwarf plants. The thistle spreads most in ploughed ground and in highways, where they are rooted among by the hogs.—*Conductor.*

TO DESTROY ANT-HILLS.

The Pismire [ants] are becoming quite a detriment on some of our valuable lands, especially meadows, by the raising of mounds and destroying of crops. They, similar to the honey-bee, when too numerous in one family, emigrate to new grounds and are thus constantly multiplying their habitations. They may be destroyed by taking out of the centre of the mound, a block the width and depth of a spade, just as winter sets in, or before the ground freezes.

Weybridge, July 23, 1835. S. W. JEWETT.

WIRE WORM.

Schenectady, 18th June, 1835.

Sir—In many parts of this county, the wire worm and grub have injured the corn, oats and barley, growing on land that had previously been in grass. Does ploughing grass land in the fall kill the worm? I am inclined to think it does not, because a meadow on our Mohawk flats, containing four acres, was ploughed last fall and planted this spring with corn previously soaked in a solution of copperas. The corn planted on three of the acres was also smeared with tar. The worms have been much more destructive among the corn that was tarred, than that which was not. This was probably owing to their being more numerous in that part of the field. A few days since, in reading one of the late numbers of that valuable English periodical, the Farmers' Series of Useful Knowledge, I found that in England they destroy the worms in grass lands in the following manner:—Knowing that the worms come above ground in the night, they at that time spread quick lime in a state of powder, over the grass, which is evenly done by throwing it with a shovel high in the air from the rear of the cart, which is driven across the field. The worms crawling about at that time are covered with lime, which soon kills them.

Respectfully yours, C. H. T.

Remarks.—The wire worm, we think, does not come to the surface at night—it remains fixed in the corn upon which it preys. It is the alkaline property of the lime, carried down by water, which destroys them if any thing. Tar is no preventative, nor fall ploughing, nor any application that we know of. Salt, at the rate of two or three bushels to the acre, is said to be efficacious. The grub or cut-worm comes to the surface at night.—*Conductor.*

THE MADDER CROP.

Hon. J. Buel—Sir—As I consider the madder crop to be one of importance, as well to the grower of the article as to the country at large, I deem it proper to send you a few lines, giving some details of the most improved method of cultivating and preparing the article for use; which, if you deem them worthy a place in the Cultivator, you are at liberty to insert.

The land best adapted to this crop is a retentive, strong loam soil, moist, but so situated that the water may pass off in the wet saasons of the year. The plant accommodates itself to almost any soil; for I last fall harvested a piece that yielded at the rate of five thousand pounds to the acre, (in hills) which was in a dry loamy soil, suitable for the wheat or corn crop.

The method of planting has been formerly in hills, from four to six feet apart. The hills yielded from two to three pounds of ground madder each, on good land.

Madder growers have lately made great improvements in the mode of planting. The drill method was introduced two or three years since, and is now the only way practised by those who raise madder in any considerable quantities. The first drills that were planted, were set in single rows, about six feet apart and eighteen inches from plant to plant. These were found to be too near together, both for the good of the crop and the convenience of tending it. It is now ascertained that the best method of planting madder, is in beds six feet wide, with four rows of plants to a bed, leaving a space between the beds nine feet wide unoccupied; or it may be planted with rows of corn or potatoes the first season. This space is useful for various purposes, as passing with a team to carry manure, should it be considered necessary during the first and second seasons. The manure should be cropped between the beds, and mixed with a plough before it is used in beds.

Particular care should be taken at the time of planting, that the ground be not too dry. It should be covered with clear, moist dirt, about two or two and a half inches deep. Soon as it has come up, it should be carefully hoed and cleared from weeds. When it is six or eight inches high, the tops should be covered up nearly to the ends; and covered again soon as they are six or eight inches high as before. In the fall, before the frost kills the tops, they should be covered entirely up. It is then left to lie till the next spring. It should be managed in the same manner during the second as the first season; but requires only two dressings before covering up in the fall. During the third season it should be dressed once certainly, and twice if practicable; and by this time the tops may be expected to cover the ground nearly from one bed to the other. During the fourth season, it requires no attention till the time for digging, which may be any time in the months of September or October. At digging time, the tops should be cut off with a scythe, and rolled out of the way; then with a plough, cut a deep furrow on each side of the bed; afterwards take dungforks and shake the dirt from the roots. They may then be picked up. Proceed in this manner till the whole bed is dug, washed clean, and dried in a hop kiln. A stove is preferable to charcoal for drying. Fifty bushels of roots may be dried in a kiln 12 feet square. They should be turned while in the kiln, at least once in six hours, until they are thoroughly dried, which takes from 36 to 40 hours. When taken out of the kiln, they should be taken immediately to the mill for grinding. Madder has formerly been ground in grist mills, but a much more convenient and economical way, is to grind in cast iron mills, constructed expressly for grinding madder.—They also answer a valuable purpose, for grinding coarse grain for provender, in sections of country where grist mills are not near by. They may be propelled by horse power, (one horse being sufficient,) or by water power if it is convenient. One of these mills will

grind 800 or 1,000 pounds a day with one horse. Improved mills of this kind can be obtained by applying to me, at West-Winfield, Herkimer county, or Lester Curtis, Nelson, Madison county. Orders for mills will be promptly attended to: price $20.

The following bill exhibits nearly the cost of cultivating an acre of madder, including the expense of digging, drying and grinding.

Seed per acre,	$32 00	Product, if well cultivated, 5,000	
Interest of land 4 years, at $40,	11 20	lbs. at 20c. per lb.	$1,000 00
Ploughing and harrowing twice,	2 50	Deduct cost,	111 70
Planting,	2 00		
Dressing first year,	8 00	Nett profit,	$888 30
do second year,	7 00		
do third year,	3 00		
Digging,	21 00		
Drying, 25c. per cwt.	12 50		
Grinding, 25c. per cwt.	12 50		
Total cost,	$111 70		

A good crop of madder looks small the first season, but those interested need not be discouraged. I have now planted nine acres, and shall be ready at the season for digging to supply seed to a considerable amount. Those who wish for seed, had better obtain it in the fall. Quantity per acre, as I plant, 8 bushels.

Price of seed: under 6 bushels, $4 per bushel; over 6 and under 12 bushels, $3.50; over 12 bushels, $3.

Respectfully yours, HERBERT WOODBERRY.

West-Winfield, N. Y. July 20th, 1835.

Elements of Practical Agriculture,

By David Low, Professor of Agriculture, &c.

THE HARROW.

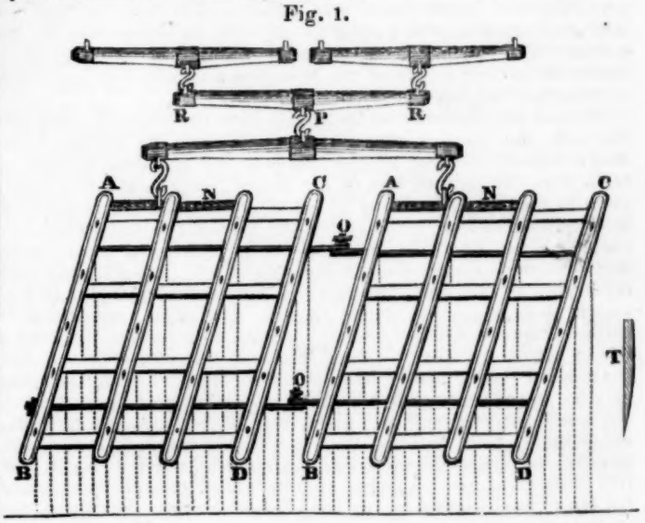
This instrument succeeds to the plough in the order of description, and the uses to which it is applicable. It consists of a frame of wood or iron, in which a certain number of teeth are fixed, which are pressed into the ground by their own weight and that of the frame. The instrument is intended to pulverize the ground which has been acted upon by the plough, to disengage from it the roots and other substances which it may contain, and to cover the seeds of corn and other cultivated plants.

The harrow is greatly more simple in its form than the plough. It is even an imperfect machine in any form of which we can construct it; yet it is of great utility in tillage, and should receive all those mechanical improvements of which its nature will admit.

The harrow performing its operation by means of a certain number of teeth moved forward in the ground, and pressed downwards by their own weight and that of the frame in which they are fixed, the first questions that occur in investigating the principles of its construction are, the form that should be disposed in the surmounting frame. Were it the purpose, in harrowing, solely to drag up the roots of plants and other substances from the ground, the best form, perhaps, that could be given to the teeth would be that of a thin wedge, tapering to the point, like the coulter of a plough, and, like it, inclining forward. But although this construction might be the best calculated for tearing up roots and other substances beneath the surface, it would not be so well fitted for covering the seeds and for breaking and pulverizing the ground, as when a broader surface was presented to the earth, and a greater movement given to its particles. The wedge for this purpose should be broad rather than thin. In order, therefore, to adapt the form of the teeth to this purpose—to the strength necessary to be given to them, and to the lateral or shaking motion to which they are subjected in passing over rough ground, as well as to their forward motion—it is conceived that the best form of them will be when their horizontal section is a square, whose diagonal is moved forward in the line of the harrow's motion; while they should gradually taper to a point, the forepart being kept straight, as in T, fig. 1.

With regard to the distribution of the teeth in the frame of the harrow, they should not be placed too closely together, for then they would be too much impeded by the obstacles opposed to them: Further, they should be so disposed with relation to each other, as that one part of the instrument shall not be more interrupted than another: Again, their number should not be too great, because then their power to penetrate into the ground will be diminished, unless the weight of the whole instrument, shall be increased in a corresponding degree: And lastly their length should not be greater than is necessary, because they will not on that account penetrate more deeply into the ground, unless the whole weight is also increased, and because this increase of length will give a greater power to the teeth, when encountered by obstacles, to split the frame in which they are fixed.

Fig. 1.



The harrows represented in Fig. 1,* of which the frame is of wood and the teeth of iron, are formed with a regard to these general principles. They are connected together in pairs by hinges. They consist each of four bars of wood, AB, CD, &c. which are joined together by an equal number of cross-bars of smaller dimensions, mortised through them. The larger bars may be 2½ inches in width or more, by 3 in depth, and the smaller 2¼ inches in width by 1 in depth. The larger bars are placed oblique to the smaller bars, and to the line of the harrow's motion, and the teeth are inserted into them them at equal distances from each other. This inclination is made to be such, that perpendiculars from each of the teeth falling upon a line LM, draw at right angles to the harrow's motion, shall divide the space between each bar into equal parts, so that the various teeth, when the instrument is moved forward, shall indent at equal distances the surface of the ground over which they pass.

The number of teeth in each harrow is 20, 5 being inserted in each of the larger bars. When two harrows, therefore, are employed together, the surface of the ground from L to M is indented by 40 teeth, impressing the ground at equal distances from each other, and covering the space of about nine feet. The teeth may project below the under surface of the frame seven or eight inches, their length somewhat increasing from the hindmost to the foremost rows, where the oblique position of the line of draught tends most to elevate the harrow. The teeth are often inserted into the frame with a little inclination forward; but this deviation from the perpendicular, if made at all, should be very slight, because it renders the harrow more apt to be impeded by the weeds or other substances collected in the angle between them and the frame. The teeth are fixed in the bars by boring holes with an auger of about three-fourths of an inch in diameter, and then driving them firmly through. The teeth, when thus driven into the bars, will be retained with sufficient firmness. The best of the common kinds of wood for the larger bars, as being the least liable to split, is elm, birch or ash, and for the cross-bars ash.

The iron rods which terminate in the hinges, O, O, may pass through the farmework to give it greater strength. These rods keep the harrows at the distance required, and the hinges admit of either harrow rising or falling according to the inequalities of the surface. When thus joined, the harrows are drawn by two horses guided by reins, the driver walking behind, so as to be pre-

* These harrows are constructed by Mr. Craig, of Galway, and sold at $15 the pair.

pared to lift up either harrow when choked by weeds, or otherwise interrupted.

The method of attaching the animals of draught will be explained by the apparatus of swing-trees, shown in the figure, by means of which each animal must exert an equal force in pulling. There are plates of iron, N, N, passing through the left-hand bars of each harrow. These plates have a few holes in them, so that the line of draught may be shifted to the right or left as may be required. The staple P upon the swing-tree RR, being the point to which the moving power of the harrow is attached, it is important to ascertain its proper position.

Were a perpendicular to be let fall from the staple P upon the line LM, the point of intersection would be in the middle of the entire breadth covered by the harrows, and an equal number of teeth would be on each side of the line of traction, and this would seem to indicate the position of the staple P. But the larger bars being placed oblique to the line of the harrow's motion, when any obstacle raised above the surface of the ground strikes one of these bars, it tends to press it to the right hand side. And as there are eight bars of this kind, and these of considerable length, it will appear that, in ground where there is any great unevenness of surface, there will be a constant succession of strokes, forming a strong lateral pressure on the left side of the several bars. But the staple P being nearly fixed in its position, while the harrows may be moved round, the effect of this lateral pressure is to turn the whole harrows on P as a pivot from left to right. In practice, accordingly, there is found to be a constant tendency in the harrows of this construction to swing around from left to right, and this often to so great a degree in very rough ground, as to place the larger bars parallel to the line of motion, thus causing all the teeth in the same bar to follow in the same track. Hence the point P ought not to be precisely in the middle of the space covered by the harrows, but placed somewhat to the left hand, in order that so great a number of teeth may be placed on the right side of the line of traction as to counteract the tendency of the harrows to turn from left to right. But further, the position of T is not fixed, but must vary with the roughness of the surface over which the harrows are dragged. Hence not only must the staple P be placed somewhat to the left hand, but there must be the power of moving it more or less towards the left hand, according to the roughness of the surface passed over. This is effected by the iron plates, with holes, of which mention has been made, and by means of which the driver can readily shift the line of draught more or less to the left hand, as may be required.

From Ruffin's Essay on Calcareous Manures.

OBSERVATIONS ON MARL AND LIME.

The theory of the constitution of fertile and barren soils, has now been regularly discussed; it remains to show its practical application, in the use of calcareous earth as a manure. If the opinions which have been maintained are unsound, the attempt to reduce them to practice will surely expose their futility; and if they pass through that trial, agreeing with, and confirmed by facts, their truth and value must stand unquestioned. The belief in the most important of these opinions, (the incapacity of poor soils for improvement, and its cause;) directed the commencement of my use of calcareous manures; and the manner of my practice has also been directed entirely by the views which have been exhibited. Yet in every respect the results of practice have sustained the theory of the action of calcareous manures—unless there be found an exception in the damage which has been caused by applying too heavy dressings to weak lands.

My use of calcareous earth as manure, has been almost entirely confined to that form of it which is so abundant in the neighborhood of our tide-waters—the beds of *fossil shells*, together with the earth with which they are found mixed. The shells are in various states— in some beds generally whole, and in others, reduced nearly to a coarse powder. The earth which fills their vacancies, and serves to make the whole a compact mass, in most cases is principally silicious sand, and contains no putrescent or valuable matter, other than the calcareous. The same effects might be expected from calcareous earth in any other form, whether chalk, limestone, gravel, wood-ashes or lime—though the two last have other qualities besides the calcareous. During the short time that lime can remain *quick* or *caustic*, after being applied as manure, it exerts, (as before stated,) a solvent power, sometimes beneficial and at others hurtful, which has no connexion with its subsequent and permanent action as calcareous earth.

These natural deposites of fossil shells are commonly, but very improperly, called *marl*. This misapplied term is particularly objectionable, because it induces erroneous views of this manure. Other earthy manures have long been used in England, under the name of marl, and numerous publications have described their general effects, and recommended their use. When the same name is given here to a different manure, many persons will consider both operations as similar, and perhaps may refer to English authorities for the purpose of testing the truth of my opinions, and the results of my practice. But no two operations called by the same name can well differ more. The process which it is my object to recommend, is simply the *application of calcareous earth in any form whatever, to soils wanting that ingredient*, and generally quite destitute of it: and the propriety of the application depends entirely on our knowing that the manure contains calcareous earth, and what proportion, and that the soil contains none. In England, the most scientific agriculturists apply the term *marl* correctly to a *calcareous clay*, of peculiar texture; but most authors as well as mere cultivators, have used it for any smooth soapy clay, which may, or may not have contained, so far as they knew, any proportion of calcareous matter. Indeed, in most cases, they seem unconscious of the presence, as well as of the importance of that ingredient, by not alluding to it when attempting most carefully to point out the characters by which marl may be known. Still less do they inquire into the deficiency of calcareous earth, in soils proposed to be marled—but apply any earths which either science or ignorance may have called marl, to any soils within a convenient distance—and rely upon the subsequent effects to direct whether the operation shall be continued or abandoned. Authors of the highest character, (as Sinclair and Young, for example,) when telling of the practical use, and valuable effects of marl, omit giving the strength of the manure, and generally even its nature—and in no instance have I found the ingredients of the soil stated, so that the reader might learn what kind of operation really was described, or be enabled to form a judgment of its propriety. From all this, it follows that though what is called *marling*, in England, may sometimes (though very rarely, I infer,) be the same chemical operation on the soil that I am recommending, yet it may also be, either applying clay to sand, or clay to chalk, or true marl to either of those soils—and the reader will generally be left to guess in every separate case, which of all these operations is meant by the term *marling*. For these reasons, the practical knowledge to be gathered from all this mass of written instruction on marling, will be far less abundant, than the inevitable errors and mistakes The recommendations of marl by English authors, induced me very early to look to what was here called by the same name, as a means for improvement: but their descriptions of the manure convinced me that our marl was nothing like theirs, and thus actually deterred me from using it, until other views instructed me that its value did not depend on its having "a soapy feel," or on any mixture of clay whatever.

Nevertheless, much valuable information may be obtained from these same works, on calcareous manure, or on marl, (in the sense it is used among us) but under a different head, viz. *lime*. This manure is generally treated of with as little clearness or correctness, as is done with marl: but the reader at least cannot be mistaken in this, that the ultimate effect of every application of lime, must be to make the soil more calcareous—and to that cause solely are to be imputed all the long continued beneficial consequences, and great profits, which have been derived from liming. But excepting this one point, in which we cannot be misled by ignorance, or want of precision, the mass of writings on lime, as well as on calcareous manures in general, will need much sifting to yield instruction. The opinions published on the operation of lime, are so many, so various and contradictory, that it seems as if each author had hazarded a guess, and added it to a compilation of those of all who had preceded him. For a reader of these publications to be able to reject all that is erroneous in reasoning, and in statements of facts—or inapplicable on account of difference of soil or other circumstances—and thus obtain only what is true and valuable—it would be necessary for him first to understand the subject better than most of those whose opinions he was studying. It was not possible for them to be correct, when treating (as most do) of *lime*, as one kind of manure, and every different form of the *carbonate of lime*, as so many others. Only one distinction of this kind (as to operation and effects) should be made and never lost sight of—and that is one of substance, still more than of name. Pure or quicklime, and carbonate of lime, are manures entirely different in their powers and effects. But it should be remembered that the substance which was pure lime when just burned, often becomes carbonate of lime before it is used, (by absorbing carbonic acid from the atmosphere,)—still more frequently before a crop is planted—and probably always, before the first crop ripens Thus, it should be borne in mind that the manure spoken of as lime, is often at first, and always at a later period, neither more nor less than calcareous earth: that lime which at different periods is two distinct kinds of manure, is considered in agricultural treatises as only one: and to calcareous earth are given as many different names, all considered to have different values and effects, as there are different forms and mixtures of the substances presented by nature.

But however incorrect and inconvenient the term *marl* may be, custom has too strongly fixed its application for any proposed change to be adopted. Therefore, I must submit to use the word *marl* to mean beds of fossil shells, notwithstanding my protest against the propriety of its being so applied.

The following experiments are reported, either on account of having been accurately made, and carefully observed, or as presenting such results as having been generally obtained on similar soils, from applications of fossil shells to nearly six hundred acres of Coggin's Point Farm. It has been my habit to make written memoranda of such things; and the material circumstances of these experiments were put in writing at the time they occurred, or not long after. Some of the experiments were, from their commencement, designed to be permanent, and their results to be measured as long as circumstances might permit. These were made with the utmost care. But generally when precise amounts are not stated, the experiments were less carefully made, and their results reported by guess. Every measurement stated, of land or of crop, was made in my presence. The average strength of the manure was ascertained by a sufficient number of analyses—and the quantity applied was known by measuring some of the loads, and having them dropped at certain distances. At the risk of being tedious, I shall state every circumstance supposed to affect the results of the experiments—and the manner of description, and of reference, necessary to use, will acquire a degree of attention that few readers may be disposed to give, to enable them to derive the full benefit of these details. But however disagreeable it may be to give to them the necessary attention, I will presume to say that these experiments deserve it. They will present practical proofs of what otherwise would be but uncertain theory—and give to this essay its principal claim to be considered useful and valuable.

When these operations were commenced, I knew of no other experiments having been made with fossil shells, except two, which had been tried long before, and were considered as proving the manure too worthless to be resorted to again. Inexperience, and the total want of any guide, caused my applications, for the first few years, to be frequently injudicious, particularly as to the quantities laid on. For this reason these experiments show what was actually done, and the effects thence derived, and not what better information would have directed, as the most profitable course.

The measurements of corn that will be reported were all made at the time and place of gathering. The measure used for all except very small quantities, was a barrel holding five bushels when filled level, and which being twice filled with ears of corn, well shaken to settle them, and heaped, was estimated to make five bushels of grain—and the products will be reported in *grain* according to this estimate. This mode of measurement will best serve for comparing results—but in most cases it is far from giving correctly the actual quantity of dry and sound grain, for the following reasons. The common large soft grained white corn was the kind cultivated, and which was always cut down for sowing wheat before the best matured was dry enough to grind, or even to put up in cribs; and when the ears from the poorest land were in a state to lose considerably more by shrinking. Yet for fear of some mistake occurring if measurements were delayed until the crop was gathered, these experiments were measured when the land was ploughed for wheat in October. The subsequent loss from shrinking would of course be greatest on the corn from the poorest and most backward land, as there, most defective and unripe ears would always be found. Besides, every ear, however imperfect or rotten, was included in the measurement. For these several reasons, the actual increase of product on the marl land, was always greater than will appear from the comparison of quantities measured: and from the statements of all such early measurements, there ought to be allowed a deduction, varying from ten per cent on the best and most forward corn, to thirty per cent on the latest and most defective. Having stated the grounds of this estimate, practical men can draw such conclusions as their experience may direct, from the dates and amounts of the actual measurements that will be reported. Some careful trials of the amount of shrinkage in particular experiments will be hereafter stated.

No grazing has been permitted on any land from which experiments will be reported, unless it is specially stated.—[*To be continued.*]

THE CULTIVATOR—SEPT. 1835.

TO IMPROVE THE SOIL AND THE MIND.

ON THE UTILITY AND BEST METHOD OF COOKING FOOD FOR DOMESTIC ANIMALS.

This subject has engaged the attention of practical men in Europe and in this country for many years, and it is a branch of rural economy at all times worthy the careful investigation of the farmer. The Highland Society of Scotland have, in a particular manner, directed the public attention to the comparative advantages of feeding farmstock with prepared or unprepared food, and have, by liberal premiums, induced numerous experiments to be accurately made, and elicited much valuable information. The conclusions which have been drawn from these and other experiments, seem to be,—

1. That a great saving, some say one-half or more, is effected by cutting the dry fodder for horses and neat cattle, and feeding it with their provender or grain, in two or three daily messes, in mangers. Not that the food is thereby enhanced in its inherent properties, but that given in this way it all tells—is all consumed, all digested, *all* converted into nutriment. There is comparatively none wasted, or voided, without having benefitted the animal. In the ordinary mode of feeding in racks, yards, and in open fields at stacks, it is well known that much *is* lost, from the difficulty of masticating uncut hay, straw and stalks, and from its being trodden under the feet of animals and spoilt. Much labor is besides saved to the animal, as cut food requires less mastication, and the animal enjoys a longer period of rest.

2. That grain and pulse, as cattle food, is enhanced in value by being ground or bruised before it is fed out, so much as to warrant the expense of sending it to mill, and the deduction of toll. Indian corn, oats, rye, and other grain, given to farm animals in a dry, unbroken state, it must have been observed by every one, particularly when the animal is high fed, are often voided in a half or wholly undigested state, and are virtually lost. This does not happen when the grain has been ground.

3. That although roots, as ruta baga, mangel wurzel and potatoes, are improved as fattening materials for neat cattle, by cooking, the advantages hardly counterbalance the extra expense of labor and fuel.

4. That for working horses, cooking the roots we have enumerated, and feeding them with cut hay and straw, is of manifest advantage; and that thus fed they supersede the necessity of grain.

5. That in fattening hogs, there is decided economy in grinding and cooking the food. The experiments upon this subject are many and conclusive. Some estimate the saving at one-half the quantity of food. Taking into account the various materials on a farm, which may thus be turned to account, we are satisfied that one-half the cost of making pork may in this way be saved.—Swine are voracious animals, and will eat more than their stomachs can digest, unless assisted by the cooking process. There are upon the farm may refuse matters, as pumpkins, squashes, small potatoes, early and defective apples and apple pomace, which are of little value, except as hog food, but which, if well husbanded, cooked and mixed with ground provender, contribute essentially to cheapen our pork. It has been questioned whether the articles we have enumerated are nutritive to pigs, when given in their raw state; while all admit, who have made the experiment, that they are highly so when cooked. Cooking undoubtedly adds to their nutritive properties, as it does to the nutritive properties of Indian meal.

Before we offer our views of the most economical mode of cooking food for hogs, and of the apparatus to be employed, we beg leave to submit the plan of a hog-pen or piggery, which, with some modifications, is the model of one we examined at the Shaker village in Niskayuna.

Fig. 1.

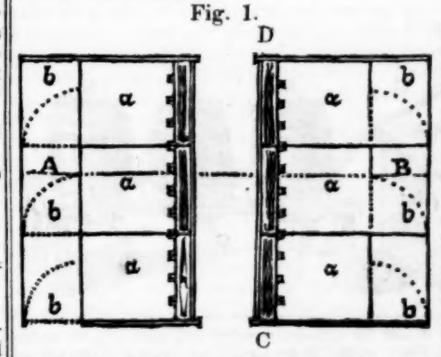


Fig. 1, exhibits a ground plain of the building, showing a gangway in the centre, with a range of pens on each side.—The breadth is 26 feet, and the length may be adapted to the convenience of the builder. The pens are six feet broad and ten feet deep, with a cross partition 4 feet from the rear, and a four feet door, which is used to close the passage between the front department (*a*) and the department *b*, or to extend the partition between the pens. The different uses of the doors are shown on the two sides in the cut. The pens are calculated for four hogs each, and the section here exhibited will therefore accommodate 24. When the pens require to be cleaned, the doors are shut into the cross partitions, as at A, so that the rear presents an uninterrupted passage, the hogs being confined in *a a*; and as soon as the pens are cleared, these doors are thrown back as at B. The troughs are embraced in the gangway.

Fig. 2.

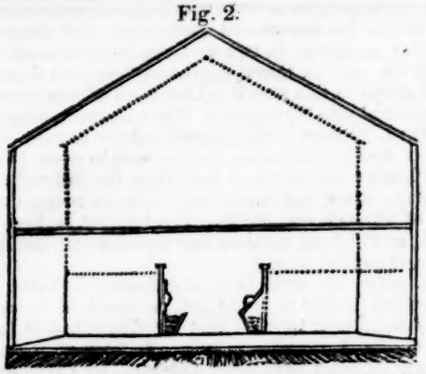


Fig. 3

Fig. 4

Fig. 2, shows a cross section along the dotted line A B. The partitions are three and a half feet high, the posts eleven feet, giving seven feet to the basement, and four to the upper story, below the roof. The position of the feeding troughs is here shown. They are provided with lids, hung with stout hinges above, and may be let down so as to exclude the hogs from the troughs while they are being cleaned or replenished with food, or raised up, at pleasure, as shown in this section. Each lid is provided with an iron bolt, (*fig.* 4.) which works in staples, and confines the lid in the position required. This section also shows the slope of the floor in *b b*, so constructed that the urine may drain off. The dotted lines represent the size of the building, when, instead of the apartments *b b*, it is wished to let the hogs run in an open yard. For small farmeries, a single range of pens and the gangway may suffice. The loft serves as a store room for hog-food, &c.

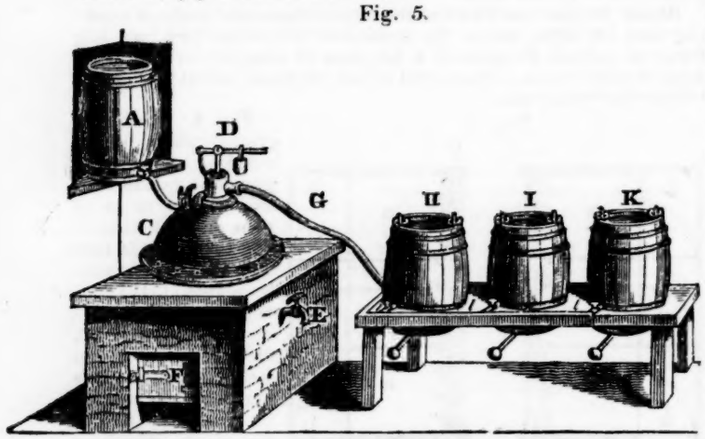
Fig 3, is a section along C D, showing the studs that prevent the interference of the hogs while eating.

The boiling or steaming room is in one end of the building, and communicates with the passage and the loft.

The peculiarities, or rather the advantages of this piggery, consist in the facility which is afforded of cleaning the pens and the troughs, and of depositing the food in the latter, without being incommoded by the hogs, and in preventing the hogs worrying each other.

We shall now exhibit the model of a steaming apparatus, calculated for a large establishment. We have shown the plan to an intelligent master in one of our furnaces, who estimates the cost of boiler, pipes and cocks, at $50.

Fig. 5.



"A is a barrel or other vessel for containing water and supplying it to the boiler C. D is a safety-valve. At the upper part of the boiler at C are placed two tubes, with stopcocks. One of these tubes terminates near the bottom of the boiler. Upon the stopcock being turned, water should always issue from this tube. When, therefore, steam issues from it, and not water, this indicates that the water is too much boiled away, and consequently that there is a deficiency of water in the boiler. The other tube terminates within the boiler, near the top. Upon the stopcock being turned, therefore, steam ought always to issue forth. But should water in the place of steam come out, then it will appear that the boiler is too full of water. In this manner the attendant, by turning either stopcock, ascertains whether there is a deficiency or excess of water in the boiler. The quantity of water could indeed be regulated by nicer means; but that described will be found sufficient in practice. F is the furnace, and E is a pipe with a stopcock communicating with the boiler.—When it is wished to obtain hot water, it is obtained by this pipe. A pipe G communicates with the barrels H, I, K, and conveys the steam to them; and in these is placed the food to be steamed. By means of the stopcocks *l, l, l*, the communication can be cut off with any of the barrels, so that the steam may be admitted to one barrel, or two barrels, or three, as may be wished.—The barrels in the figure are three, but the number may be extended. Each barrel has a moveable lid, which is kept down by screws, and a sliding board below, by which the food, when ready, is withdrawn. The barrels are raised on a frame, so that a wheel-barrow or vat may be placed below, and the food at once emptied into it.

"By means of an apparatus of this kind, roots and other parts of plants may be steamed in a convenient and economical manner."

The relative advantages of steaming and boiling, will very much depend, we suspect, on the extent of the establishment. We have tried both, though our steamer was imperfect, and have come to the conclusion, that when the number of hogs to be supplied does not exceed 15 or 20, boiling is preferable,—as with a good boiler, of the capacity of 30 gallons, from 12 to 16 barrels of food may be easily cooked in a day. But much depends on the judicious setting of the boiler, so that it may receive the whole advantage of the fire. For this purpose the brick work should be made to conform to the shape of the kettle, leaving a space of three or four inches between them, until it reaches nearly the top of the kettle, when a tier of brick set edgeways is projected for the flange of the boiler to rest upon; and the bottom of the fire flue should be above the bottom of the kettle, or about parallel with the commencement of the slope which rounds its bottom. By this means, the flame is thrown upon the sides and bottom, and in a manner that the whole boiler is collapsed with it on its passage to the smoke flue; and the brick work being heated constantly refracts back its heat upon the boiler. A tight cover should be laid over the cooking food, to prevent the free escape of the steam, by partially confining which, the cooking process is greatly facilitated.

There should be appended to the hog-house an open yard, for straw, litter, weeds, &c. which the hogs, during summer, will work into manure, and into which the dung is thrown from the pen.

Hogs are subject to various diseases, particularly if shut up in a close pen, during the time of fattening, which are often suddenly fatal. Prevention is here easier than cure; and many farmers prefer giving their hogs yard room, where they can root in the earth, which is deemed a preventive. Others give them occasionally rotten wood, charcoal, sulphur, antimony or madder, all which are considered as aperients, cleansers or alteratives, and consequently as conducing to health. Salt is all important, and should be habitually blended with their cooked food.

ON THE MANUFACTURE OF CIDER.

The quality of cider depends on several contingencies, among which may be reckoned,

1. The species of fruit employed;
2. The soil and aspect of the orchard;
3. Condition of the fruit;
4. The process of grinding;
5. Management of the vinous fermentation; and
6. The precautions which are taken to prevent the acetous fermentation.

We shall offer some brief remarks under each of these heads. And,

1. *The Fruit.* Apples differ not only in their flavor, colour, and time of ripening, but in the proportions of their constituent parts. The most material of these constituent parts are acid, sugar, astringency, vegetable extract and water. The properties of good dessert and cider apples are seldom found united, though they are not incompatible with each other. Table apples are esteemed on account of their bland and aromatic flavor, crisp and juicy pulp, and for the property of keeping long, or ripening late. The characteristics of a good cider apple are, a red skin; yellow and often tough and fibrous pulp, astringency, dryness, and ripeness at the cider making season. "When the rind and pulp are green, the cider will always be thin, weak and colourless; and when these are deeply tinged with yellow, it will, however manufactured, or in whatever soil it may have grown, almost always possess colour, with either strength or richness."—(*Knight.*) The apple, like the grape, must attain a state of perfection, or perfect maturity, before its juices develop all their excellence; and as many

of our best eating apples do not acquire this maturity until winter or spring, this affords a satisfactory reason why winter fruit is seldom or never good cider fruit. In a dry apple, the essential elements of cider are generally more concentrated, or are accompanied with a less proportion of water, than in a juicy one; of course the liquor of the former is stronger than that of the latter. Of our best cider apples, ten or twelve bushels of fruit are required for a barrel of juice; while of the ordinary juicy kinds, eight bushels generally suffice.

The only artificial criterion employed to ascertain the quality of an apple for cider, is the specific gravity of its *must* or unfermented juice;—or its weight compared with that of water. This, says Knight, indicates, with very considerable accuracy, the strength of the future cider. Its weight and consequent value, is supposed to be increased in the ratio of the increase of saccharine matter. In making wine of domestic fruit, say of the current or gooseberry for example, we use sugar till the unfermented liquor attains a certain specific gravity; or until the saccharine matter of the fruit and that artificially supplied, bears a certain proportion to the water. This ensures to the liquor, strength, or body, as the sugar is converted into spirit by the fermentive process.

The specific weight of the most of apples differs materially.—That of some varieties is lighter than distilled water, while the juice of others is materially heavier. Taking water at 1.000 as the standard, the Redstreak, Styre, and other of the old cider varieties, afforded a must of the specific gravity of 1.060 to 1.079, and some of the new varieties, produced by Knight, as the Downton, Foxley, Siberian Harvey, &c. of 1.080 to 1.091.

2. *Soil and aspect.*—The apple, like the grape, is known to take much of its character from the soil on which it grows. The best cider orchards in England, are on a stratum of red marl which stretches across the island. The soil of Herefordshire, highly reputed for its ciders, is an argillaceous, or clay marl. And Knight says, the strongest and most highly flavored cider which has been obtained from the apple, was produced from fruit growing on a shallow loam, on limestone basis. All the writers upon the subject seem to agree, that calcareous earth should form a component part of the soil of a cider orchard. It appears to have the effect of mitigating the harshness of rough and austere fruits, and of neutralizing the juices of those which are too acid. Coxe says, the soil which grows good wheat and clover, is best for a cider orchard. Our own observation would induce us also to prefer a dry and somewhat loose soil, in which the roots, destined to furnish food for the tree and fruit, may penetrate freely, and range extensively, in search of nutriment. The juices of plants and fruits are always more concentrated when growing on a dry than on a wet soil. Mint, or other aromatic herbs, is much stronger in the specific virtues of the plant, when grown on a dry soil, and greater in volume, when grown on a wet one. The maple yields the sweetest sap, though less in quantity, on a dry soil. Apples may grow large on a moist alluvion; but the fruit will neither be so abundant, nor so rich, as on a dry soil. The thriftiest trees produce the most wood buds; those less thrifty the most fruit buds. The best aspect for an orchard is one somewhat elevated or undulating, protected from prevailing cold winds—and facing the south, south-east or east. Ciders brought to the Albany market, from the hilly towns of Columbia and Saratoga, on the transition formation, possess the most spirit, best flavor, and resist longest the acetous fermentation.

3. *Condition of the fruit.*—Fruit should be used when it has attained its perfect state of maturity, and before it begins to decay, because it then yields the greatest proportion of saccharine matter. The most certain indication of ripeness, says Crocker, is the fragrance of the smell, and the spontaneous dropping from the trees. Each kind of the apple should be manufactured separately, or those kinds only mixed which ripen at one time, and which experience shall show, are not prejudicial to each other. Who would ever think of making a superior wine from an indiscriminate mixture of a dozen kinds of grapes? And yet we seem to expect good cider from an indiscriminate mixture of a dozen kinds of apples. It may be urged, that the evil is irremediable, because our orchards, containing these dozen varieties, have been furnished to our hands; and that neither the quantity nor quality of any one kind of fruit renders it an object to manufacture it separately. Is it not time then, to set about correcting the evil, by selecting only the best kinds for new plantations? A farmer should make cider to sell, and it is material to him whether he obtains two or ten dollars the barrel. Our manufactories, our towns and cities, and the demand for exportation, will always ensure a market and price for good ciders. Mr. Wynkoop, of Lancaster, Pa. has 400 trees of the Virginia crab, on less than five acres of ground; and when his orchard was twenty-two years old, he stated to the President of the Pennsylvania Agricultural Society, that it produced him every other year forty hogsheads of cider, of 112 gallons each; which he sold at Philadelphia at 2s. 6d. the gallon, or about $1,500 in the gross. And yet this apple is not a first rate cider apple. It is deficient in sugar, but abounds in astringency, rather a keeping than an enriching quality. What farmer can apply his land to better profit? Wines differ as much in their quality and price as ciders. Fruit, soil and skill make the difference in both; and upon the proper selection and exercise of those depend the quality of the liquor, and the consequent profits of the cultivator. Upon this branch of the subject, I will only add, that the apples should ripen upon the tree, be gathered when dry, in a cleanly manner, spread in an airy, covered situation if practicable, for a time, to induce an evaporation of aqueous matter, which will increase the strength and flavor of the liquor, and be separated from rotten fruit and every kind of filth before they are ground.

4. *Grinding, &c.*—The apples should be reduced by the mill, as nearly as possible to a uniform mass, in which the rind and seeds are scarcely discoverable; and the pomace should be exposed to the air from twelve to twenty-four hours, according to the temperature, before it is pressed. The juices of the rind of fruit, as may be instanced in the orange and lemon, are highly concentrated; and those of the rind of the apple have a material influence, with the aromatic bitter of the seeds, upon the flavor and strength of the liquor.

On partially macerating the pulp of an apple, and subjecting it to immediate pressure, the juice which escapes will be found to be thin, nearly colourless and devoid of flavor. If the maceration is perfect, so as to crush the seeds and break down the rind, the strength, colour and flavor of the must will be improved: and if the macerated pulp is exposed for a few hours to the atmosphere, and then subjected to pressure, these desirable properties in the liquor, will be found to be still further augmented. "By the chemical action of the roller," says Knight, "the various fluids which occupy the different vessels and cells of the fruit are mingled with the juices of the rinds and seeds, and with the macerated substance of the vessels and cells themselves. In such a mixture it seems probable that new elective attractions will be exerted and compounds formed, which did not exist previously to the fruit being placed under the roller; and hence the most correct analysis of the expressed juices will convey but a very imperfect degree of knowledge of the component parts of the different fluids, as they existed in their state of separation within the fruit. I have often extracted," he continues, "by means of a small hand-press, the juice of a single apple, without having previously bruised it to pieces; and I have always found the juice thus obtained, to be pale and thin, and extremely defective in richness, though the apple possessed great merit as a cider fruit. I have then returned the expressed juice to the pulp which I have exposed, during a few hours, to the air and light: and the juice has then become deeply tinged and very rich. In the former state it apparently contained but a very small portion of sugar; in the latter it certainly contained a great quantity; much of which I believe to have been generated subsequently to the juice having been subjected to the action of the press; though it may be difficult to explain satisfactorily the means by which it could have been produced." Knight ascertained by a subsequent experiment, that by exposing the reduced pulp to the operation of the atmosphere, for a few hours, the specific gravity of the juice increased from 1,064 to 1,073; and from the experiment being repeated in a closed vessel with atmospheric air, he ascertained the accession to be oxygen, which according to Lavoisier, constitutes 64 per cent of sugar. For fine cider, he recommends, that the fruit be ground and pressed imperfectly, and that the pulp be then exposed twenty-four hours to the air, being spread, and once or twice turned, to facilitate the absorption of oxygen, that it be then ground again and the expressed juice be added to it before repressing. In straining the must, too much care cannot be taken to exclude the pulp, as its presence is apt to render the fermentation too violent, and drive into the acetous stage. A hair seive, filled partly with straw, an-

swers the purpose well. The mill which most effectually reduces the pulp is to be preferred. It has been remarked with much force, that cider mills should, like school-houses, be limited to one in a district. In this way, it would be an object with the owner, to render his implements complete, and to conduct the process with care and skill. And as the value of the cider depends so much upon its being well made, it is believed the owners of the fruit, as well as the purchasers of the cider, would be benefitted by such an arrangement.

5. *Vinous fermentation.*—This is commonly called *working*. It commences at the temperature of 59° Fah. and cannot be conducted in safety when the heat is over 75°, for a high temperature induces a too rapid fermentation, by which much of the spirit passes off with the disengaged carbonic acid gas, and the acetous or vinegar fermentation begins at 77°. This will show the importance of conducting the vinous fermentation under a proper temperature, which is from 50 to 70° of Fah. To show the chemical effect of the vinous fermentation it will be proper to repeat, that the unfermented juice, or *must*, of the apple, consists of saccharine matter or sugar, vegetable mucilage or extract; astringency or tannin; malic, and a small matter of gallic acid, the principle of flavor, tinging or colouring matter, and water. The sugar becomes the basis, or spirit, of the fermented liquor; the spirit, after vinous fermentation, and the tannin, or astringent matter, preserve it from the acetous fermentation, if the vegetable mucilage or yeast, is separated when it has performed its office. This vegetable mucilage acts upon the saccharine matter in a manner analagous to yeast upon the wort of the brewer—it causes fermentation, and converts sugar into spirits—by its giving off carbonic acid gas, and imbibing hydrogen—the liquor becomes clear, and part of the mucilage rises to the surface with the disengaged air, in the form of froth, and the residue is precipitated, with the heavier impurities, to the bottom, in the form of sediment or lees. This is the critical period. The liquor may now be drawn off clear. If left longer, the feculent matter, or froth, by parting with the gas which renders it buoyant, soon settles and mixes with the liquor, renders it turbid, and as soon as the temperature attains a proper height, causes a new fermentation. This will explain the reason why ciders become harsh and sour on the approach of warm weather in the spring. The elementary principles of sugar, ardent spirits and vinegar, it has been ascertained by the experiments of Lavoisier, are the same; and these substances only differ in the proportion of their component parts, and in the modes of their chemical union. Sugar consists of hydrogen, oxygen and carbon. An increased proportion of hydrogen enters into the composition of ardent spirits, and of oxygen into vinegar. The same agent, vegetable mucilage, which converts the sugar of the apple into spirits, will convert the spirits into vinegar, under a proper temperature, and aided by the oxygen of the atmosphere. The process of making vinegar is greatly accelerated by exposing cider or wine to the atmosphere, the oxygen of which it imbibes, and which is termed by chemists, the great acidifying principle. Here again we see the propriety of professional cider manufacturers, who might be provided with cellars where the temperature could be regulated, and who would carefully rack off the liquor at the completion of the vinous fermentation.

The vinous fermentation commences and terminates at different periods, according to the condition and quality of the fruit, and the state of the weather. The juice of unripe fruit, if the weather be warm, will begin to ferment in a few hours after it passes from the press; and seldom stops at the vinous stage. The juice of ripe fruit, when the temperature is lower does not begin to ferment under a week or fortnight, or longer, often continues slowly through the winter, and when made from some of the finer cider apples, is not completed under six or nine months. Indeed, in some cases the liquor does not become clear under a year, and the sugar is not wholly decomposed under two years: For the whole of the sugar is seldom decomposed during the first sensible fermentation. Knight considers cider at two years old as in the best state for bottling. For until the sugar is decomposed, fermentation insensibly goes on, and the strength of the liquor increases. The like insensible process goes on in wines, and when it is completed, the wines are said to be ripe, and are in their highest state of perfection. *(See Mc Culloch.)* Temperature being the same we think it may be assumed as a rule, that fermentation will be rapid and short, in an inverse ratio to the proportion which the saccharine matter bears to the mucilage and water; and that the vinous liquor will be rich, high flavored and durable, in proportion as the sugar and astringency preponderate in the must.

6. *Precautions to prevent acetous fermentation.*—These are, supposing the previous contingencies to have been favorable, a careful separation of the vinous liquor from the froth and lees,—a cool temperature,—racking and fining,—and artificial means to destroy the fermenting quality of the remaining mucilage.

We have already suggested the importance of drawing off the liquor from the scum and sediment—at the termination of the vinous fermentation. This period may be known by the cracking of the froth in an open cask, or, if in a close one, by the application of the nose or ear to the bung hole. If the fermentation has not ceased, a hissing will be apparent, and the gas given off will give a pungent sensation to the nose. If the liquor is not sufficiently clear, or indications appear of the acetous fermentation having commenced, the cider should be racked into clean strong casks, and fined with isinglass, eggs, or skimmed milk. This operation may be repeated if found necessary; but it should be performed in clear cold weather. After the first racking, the casks should be kept bunged close, and further rackings be avoided if possible, as every racking reduces its strength, and much of the spirit escapes with the cabonic acid gas which is evolved in the fermentive process. The oxygen of the atmosphere, besides, increases the vinegar fermentation. But if these methods fail, resort may be had to the means of impeding the natural operation of the mucilage, or vegetable leaven. This may be done by what is called *stumming*, that is burning a rag impregnated with sulphur, in the cask in which the liquor is to be decanted, after it has been partly filled, and rolling it so as to incorporate the liquid with the gas; or by putting a drachm or two of sulphate of potash into each cask, which will precipitate and render insoluble the remaining leaven. If the fruit is good, and properly ground, and the cider racked from the fermenting casks at a proper time, most or all of the subsequent operations will be superseded.

The vinous fermentation is here considered as embracing the whole process till the sugar is converted into spirit. This may be subdivided: the production of sugar being termed the *vinous*, and the conversion of sugar into spirit, the *spirituous* fermentation.

NEW AMERICAN ORCHARDIST.

The second edition of KENRICK'S *New American Orchadist*, has been just issued from the Boston press, revised and considerably enlarged, by the author. The additional matter embraces a chapter *on climate*, one on *modern or landscape gardens*, one on *usefulness of fruits for food and health*, a *practical treatise on mulberry plantations and the culture of silk*, and a compendious notice of the whole class of *useful vegetables*. The letter press is neatly executed, in a 12mo. size, pp. 420—price $1.

Our county is comparatively yet in its infancy in horticultural improvement, and particularly in that branch of it which regards the selection and cultivation of choice fruits. Most of our people are not only ignorant of the relative value of good and bad fruits, but are perfectly indifferent what kinds they cultivate, and too many of them care not whether they cultivate any at all. We consider the free use of the finer cultivated varieties as among the higher and most innocent indulgences of the appetite; and as not only increasing our animal comforts, but as imparting health to the body, and benignity to the mind. We therefore hail with pleasure whatever has a tendency to diffuse a taste for these rural enjoyments, and to instruct us in the selection and culture of those fruits which Providence has bountifully provided for our use. Although we by no means consider the work before us as perfect, it is perhaps as perfect as the present state of pomological knowledge among us would permit us to expect, and is certainly a valuable guide and assistant in the management of the orchard and garden. The author is among our most promising young men. He possesses a discriminating mind, honest intentions and indefatigable industry; and promises, if his life and faculties are spared, to become eminently distinguished in this branch of rural improvement. He has been aided in this work by many of the most experienced pomologists of our country, and has profited much from the perusal of modern European works upon the subject on which he writes. We know of no American better qualified for the task than Mr. K.

The opinion is too prevalent, that fruits are prejudicial to the health. This may be true with certain qualifications. Fruits that

are gathered before they are ripe, and before their finer qualities have become developed, and transported to market in masses, in hot weather, often attain an incipient state of putrefaction before they are consumed. Fruits in this condition, which are too frequently exposed for sale in our cities, are undoubtedly prejudicial to health; and it is this circumstance that has brought the whole family into bad odor with some. Yet nothing can be further from the truth, than the allegation, that the fruits of our gardens, when suffered to mature, and eaten fresh and in moderation, are hurtful to health. *None can truly appreciate the value of fruits, but those who cultivate them:* the care and toil bestowed in their culture give to them a zest which the buyer can never realize; and *ripe* fruits will seldom bear transportation.

Upon the *utility of fruits for food and the preservation of health*, we quote the following from page 21, &c.

"The fruits of various countries and climes, should be regarded as one of the most valuable gifts which Divine Providence has bestowed on man; and the cultivation of those of superior kind should on all accounts be promoted —not merely as a source of luxury, nor yet alone as a delicious, healthy and most nutritious article of food; but as connected in other respects with all that eminently concerns the family of man. 'The palate,' says the celebrated Mr Knight, 'which relishes fruit, is seldom pleased with strong fermented liquors; and as feeble causes, continually acting, ultimately produce extensive effects, the supplying the public with fruit at a cheap rate, would have a tendency to operate favorably, both on the physical and moral health of the people.'

"The belief is but too prevalent, that fruits produce diseases during the months of summer and autumn, and especially the dysentery. The belief is untrue—and the very reverse is certainly true; fruits being the true preventives of disease. I might amplify on this subject, but must be brief, and will only add as proofs, and from celebrated physicians, the following from the 'Annals d'Horticulture,' due to the researches of Gen. Dearborn and the New-England Farmer, where I found them inserted. It is from the writer of another country—a country celebrated for the cultivation of good fruit, and alike celebrated for the remarkable temperate habits of its people. 'One of the best aliments, and the best appropriated to the different ages of life, is that which fruits afford. They present to man a light nourishment, of easy digestion, and produce a chyle admirably adapted to the functions of the human body.' * * * *

"There are fruits which, when perfectly ripe, can be eaten even to excess without inconvenience—such as grapes, cherries and currants—the other kinds never occasion ill consequences, if they are eaten only to satisfy the demands of nature.

"Thoroughly ripe fruit, eaten with bread is the most innocent of aliments, and will even insure health and strength.

"In traversing the territories of Germany, there is to be seen, near each habitation, a vineyard or a garden of fruit trees. The villages are surrounded with them, and there are but few families who do not make use of fruits during summer, and preserve a certain quantity for winter. The surplus is sold in the cities. There are to be seen upon the Rhine, and other rivers of Germany, boats laden with dried apples, pears and plums.

"The following from the same writer, is from a passage to be found in '*Advice to people upon their health*,' by Tissot.

"There is a pernicious prejudice, with which all are too generally imbued: it is that fruits are injurious in the dysentery, and that they produce and increase it. There is not perhaps a more false prejudice.

"Bad fruits, and those which have been imperfectly ripened, in unfavorable seasons, may occasion cholics, and sometimes diarrhœa—but never epidemic dysentery. Ripe fruits of all kinds, especially in the summer, are the true preservatives against this malady. The greatest injury they can do, is in dissolving the humors, and particularly the bile, of which they are the true solvents, and occasion a diarrhœa. But even this diarrhœa is a protection against the dysentery.

"Whenever the dysentery has prevailed, I have eaten less animal food, and more fruit, and have never had the slightest attack. Several physicians have adopted the same regimen.

"I have seen eleven patients in the same house; nine were obedient to the directions given, and ate fruit; they recovered. The grandmother, and a child she was most partial to, died. She prescribed burnt wine, [*burnt brandy or high wine?*] oil, powerful aromatics, and forbade the use of fruits; it died.—She followed the same course, and met the like fate.

"This disease was destroying a Swiss regiment, which was stationed in garrison in the southern part of France. The colonel purchased the grapes of several acres of vines. The sick soldiers were either carried to the vineyard, or were supplied with grapes from it, if they were too feeble to be removed. They ate nothing else; not another died—nor were any more attacked with the complaint after they commenced eating grapes.

"A minister was attacked with the dysentery, and the medicines which were administered gave no relief; he saw by accident some red currants, and had a great desire to eat them; he ate three pounds between seven o'clock in in the morning and nine in the evening; he was better during the day, and entirely cured the next."

RIDGING.

The object of ridging, in tillage husbandry, is either 1, to render the soil more warm and friable, by exposing a greater surface to the sun; or, 2, to render it more dry, by increasing the facilities for the surface water to pass freely off. The climates where ridging is most practised, are those which are cold and humid; the soils which are most benefitted are stiff clays, or those of a more porous quality, which repose upon a tenacious subsoil, and have a level, or but a gently inclined surface. Where the slope is sufficient to carry off the surplus water, or the subsoil porous enough to give it a free passage below the roots of plants, ridging in our climate, is rather prejudicial than otherwise; because it causes a waste of land, by multiplying water-furrows, and augments the injuries of a dry season. Ridging and under draining are designed for the same end, viz. to free the roots of cultivated plants from the habitual presence of water, always prejudicial to their health and product. In former times the first of these modes was generally resorted to; but in the improved system of husbandry under draining has obtained a decided preference. In some of the tenacious soils of Gloucestershire, England, where the surface is level, Marshal, tells us, that ridges have existed, time out of mind, so high, that two men standing in adjoining water furrows are unable to see each other across the intervening ridge. In Scotland, on the other hand, at the present day, parallel underdrains are often made, at the distance of 20 or 30 feet, in large tracts of moist or stiff lands, possessing a level surface, and ample remuneration is found for the outlay in the improvement which ensues. These drains are now principally made with draining tiles, which are laid about two feet from the surface, and in parallel lines of twenty feet are found to preserve in high tillable order the most cold and tenacious soils. We are having some draining tiles made for our use, and shall at a proper opportunity, apprize our readers of the expense and advantages of this mode of under draining.

"Stagnant water," says Loudon, "may be considered to be injurious to all the useful classes of plants, by obstructing perspiration and intro-susception, and thus diseasing their roots and submerged parts. Where the surface soil is properly constituted, and rests on a subsoil moderately porous, both will hold water by capillary attraction, and what is not so retained will sink into the interior strata by its gravity; but where the subsoil is retentive it will resist or not admit with sufficient rapidity, the percolation of water to the strata below, which, accumulating in the surface soil, till its proportion becomes excessive as a component part, not only carries off the extractive matter, [the food of plants,] but diseases the plants. Hence the origin of surface draining, that is laying lands in ridges or beds, or intersecting it with small open gutters."

It will be perceived, from the preceding view of the subject, that the propriety or impropriety of ridging will depend upon a variety of circumstances which are liable to vary in every district, and upon almost every farm. No general rule will apply. A practice that might be beneficial in a flat humid district of New-York, might be prejudicial in an undulating warm district in Pennsylvania or Virginia. Yet as there are a great many farms that are essentially benefitted by the practice, we will suggest some considerations that may be beneficial, at least to the novice in husbandry.

1. Ridges should be laid with the slope of the field, that the waters may pass off freely; and if hollows or hills intervene, cross drains should be cut, after the field is ridged, from the low places, to carry off the water, in the direction to which the surface inclines.

2. The breadth of the ridge must depend upon circumstances, and may vary from two to thirty feet. The flatter the surface, and the more tenacious the soil, the narrower should the ridges be laid. The manner of forming them of different breadths, and of different inclination of surface, will be found amply described and illustrated in the fifth No. of our present volume. It is well to remark, to those who admire and imitate British husbandry, that ridging is not so essential here as in Great Britain—from the circumstance of our climate being warmer and less humid. It is a common practice in Britain to drill turnips, particularly Swedes, upon ridges. Here we think they do best drilled upon a level surface, presupposing, however, that they are to be grown upon soils adapted to their culture, which are light and porous.

3. Head lands are indispensable to good work where a field is to be laid in ridges, and trenches should be made through these, at least upon the lower border of the field, to carry off the water from the middle furrows.

"The grains are God's *bounties;* the flowers his *smiles.*"

EARTHING PLANTS.

Our late quotation from Lorain, against earthing up, or hilling hoed crops, has called forth, it will be seen, the animadversion of a respectable correspondent, in to-day's Cultivator. The benefits sought for by ridging, are in some measure obtained by earthing plants, that is, the plants are less liable to be incommoded by water, and a geater surface is exposed to the ameliorating influence of the sun and atmosphere; but then it must be confessed, that serious injury is likely to ensue, from cutting and restricting the range of the roots, and the waste of manure, incident to the earthing process, particularly where the plough is employed, as it usually is. We have made this the subject of experiment and observation for some years, and the conclusion we have come to is, that upon our sandy soil, there is neither field nor garden crop, save potatoes, that is benefitted by being earthed up, if the ground has been properly prepared, and the surface is kept clean and open, by the cultivator, harrow or other implement;—and that even the potato crop should be only earthed up at the first dressing. Earthing plants, as Lorain observes, is not imitating nature, whose teachings constitute our best guide. The most plausible reason urged for this practice, except what we have intimated at the commencement of this paragraph, is, that it affords a bed of fine pulverized mould for the roots of plants to range in for their food; but if the ground is well prepared and drained, and the surface kept loose, this labor is seldom necessary. While on the other hand, the disadvantages of the practice are manifest. We will illustrate this in the corn crop. When this receives its last dressing, it is usually from three to five feet in height, and we assume it as a fact, of which we have had ocular demonstration, that the roots at this time, unless they have been already shortened by the plough or hoe, are of greater length than the tops—or in other words, that they occupy the whole ground. Now supposing the hills to be four feet apart, it gives to each hill four superficial feet of soil to thrive upon. If you run a plough twice between the rows, one way, you reduce this four square feet of pasture, at least until the roots can be elongated, to three feet, and if you plough your corn both ways, you reduce it to two, or one-half, and this too at a time when the grain stands most in need of an abundant supply of food. Nor is this all; nature has ordained, and she will in this be obeyed, that plants shall have surface roots, to imbibe the benign influence of the atmosphere, and when those which she provides are buried under a load of earth, she will provide new ones; and every earthing which we give to our corn and potatoes, causes a new growth of surface roots, at the expense of the crop. Besides droughts operate far more prejudicial to hilled crops than they do to those which are not hilled.

The potato, according to our understanding, has two sets of roots, which perform entirely different offices for the plant—the proper roots, which take the unelaborated food from the soil—and the stollens or fruit bearing roots, which receive the elaborated food, and convey it to the tubers. The first are protruded as soon as the seed germinates, the latter not till the plant has made most of its growth. The first strike down obliquely; the latter shoot horizontally, and repose near the surface. The object of earthing is to furnish a bed permeable to the stollens, and which will give readily to the pressure of the expanding tubers. The hill may be formed when the seed is deposited; but as the soil is apt to become compact, it is better to form it later, but before the stollens and tubers have formed; for if the plant is earthed after these have begun to form, a new set of stollens is thrown out near the surface, the tubers upon which seldom attain to full size. Hence a late earthed crop is likely to abound in small potatoes.

Calcareous Manures.—We invite the attention of the reader to Mr. Ruffin's experiments with shell marl, inserted in to-day's Cultivator. The extract details but a small portion of the experiments made by this enterprising gentleman, and which are narrated in his essay—a work which we cannot too warmly commend to the patronage of every farmer who can avail himself of the advantages of calcareous manures. And it may not be amiss here to repeat, that most if not all our sandy districts abound in clay marl, a material calculated to impart as much benefit to a sandy soil, as shell marl has been found to impart to the poor clays of maritime districts. And the expense—what is it compared to the advantages! Twenty to forty loads to the acre constitute a good dressing, the benefits of which will be as lasting as time. Clay marl should be carted on to the field in autumn, and deposited in small heaps, that it may be broken down and pulverized by the frosts of winter, before it is blended with the soil.

Transplanting Evergreens.—This may be done all the present month, taking care that the roots do not dry, and that the transplanted trees do not suffer from drought. Mulch the surface about the transplanted trees with coarse litter, and saturate this with water. The only danger, if the operation is well performed, is from evaporation, which is much less now than at midsummer. Evergreens must have a prompt and constant supply of moisture and food to sustain their foliage, when transplanted.

On the 8th of July last, during a bright sunshine, the thermometer at 80°, and between the hours of one and three P. M. we went to the commons, took up, brought home and planted in our court yard, six white pines, nine to twelve feet high, and feathered with limbs to the ground. They are all now living, Sept. 1, and promise to do well. A few tender branches, injured in the transportation, have alone died.

Gama Grass—We have given this grass a fair trial, and have become satisfied that it cannot answer any valuable purpose in northern husbandry, and that it is not, as has been said, found growing naturally in Connecticut. We soaked the seeds in hot water, sowed them early in a hot bed; they germinated freely, and as soon as the season would warrant, the plants were removed into a bed of rich garden mould. Their growth has been diminutive, and affords no hope that this grass can amount to any thing as a forage crop.

William Murphy complains that he cannot make grass seeds take on a stiff brownish clay—proposes to apply 20 bushels of lime to the acre, and asks our opinion as to the expediency of the application. The lime should be quadrupled to produce a good effect, and even then its benefits cannot be insured. We suspect the stiff clay was not sufficiently pulverized, and that the grass seeds were sown in a dry time, and the roller not used—consequently that the seeds failed to vegetate for want of moisture, or from the earth not coming in close contact with them. We advise, that 20 loads of manure be substituted for the lime, that the ground be well pulverized, and rolled after the seed is harrowed in. A heavy bush drag may be substituted for the roller. It will pulverize the surface, and press the earth upon the seeds.

The Tomato.—Dr. Bennett, a medical professor in one of the western colleges, considers the tomato as an invaluable article of diet. He ascribes to it high medicinal properties, and declares,

"1st. That it is one of the most powerful deobstruents" [i. e. removing obstructions; having power to clear or open the natural ducts of the fluids and secretions of the body; resolving vicidities; aperient,] of the materia medica; and that in all those affections of the lesser organs, where calomel is indicated, it is probably the most effective, and least harmful remedial agent known to the profession.

"2d. That a chemical extract will probably soon be obtained from it which will altogether supersede the use of calomel in the cure of diseases.

"3rd. That he has successfully treated serious diarrhœa with this article alone.

"4th. That when used as an article of diet it is almost a sovereign remedy for dyspepsia, or indigestion.

"5th. That persons removing from the east or north, to the west or south, should by all means make use of it as an aliment, as it would in that event save them from the danger attendant upon those violent billious attacks to which almost all unacclimated persons are liable.

"6th. That the citizens in general should make use of it, either raw, cooked or in the form of a catsup, with their daily food, as it is the most healthy article of the Materia Alimentary, &c. &c."

Without intending to endorse all the professor's conclusions, we know enough of the tomato, from experience, to recommend it as a grateful vegetable, and salutary to health, in the summer months. It is extensively used in the south and south-west, as an article of diet. It is easily cultivated, and readily prepared for the table in various forms, requiring merely a seasoning of salt and pepper. It belongs to the same family of plants as the egg plant, potato and deadly nightshade. To obtain it when most wanted, during the heats of summer, the plants should be started in a hot-bed, and afterwards planted out two or three feet apart, in a soil moderately rich, in which case the ripe fruit may be gathered early in July.

To make tomato sauce, the ordinary preparation for the table, peel the ripe fruit, place it in a sauce-pan, over the fire, without

water or other liquid; in a few moments it will be cooked; season with salt and pepper to the taste, and serve up.

"*Teasels.*—This at present is one of the most profitable of crops. There is a crop to be gathered this fall on three or four acres of what was Mr. Cogswell's garden, said by competent judges to be worth $3,000. We are told that many Farmers in Hatfield, have gone into the cultivation of it. The scarcity of the article is the main cause of its present high price. A few years since it was so low as to be hardly worth raising, and the probability is that there will soon be an abundance to supply the market."—*Northampton paper.*

The Fuller's Teasel is a biennial plant, the crooked awns of the heads of which are used by clothiers, for raising the knap on woollen cloths. For this purpose, they are fixed round the periphery of a large broad wheel, against which the cloth is held, while the machine is turned. The seed may be sown in April or May, in drills 7 to 10 inches apart; the plants must be kept free from weeds and thinned to the distance of one foot apart. In the second year, the plants are earthed up; in July, the plants begin to flower, and in August, as soon as the blossoms decay, such heads must be cut off, and exposed daily to the sun, till they become completely dry, care being taken to protect them from the rain.

Hop Premiums.—The Brewers, we understand, have appointed three of their association, and they mean to invite the hop-growers to add two or three of their number, as a committee of examination, to award the silver cups which are to be given as premiums to the growers of the best parcels of hops. Every hop farmer should endeavor to be present at the examination, and to bring his crop with him, as it is expected purchasers will attend from New-York, Philadelphia, and other towns.

Cutting Corn.—We repeat our advice to the farmer, to cut his corn as soon as the grain become seared or glazed. The corn crop is late, and fodder is like to be in demand. If, as is to be apprehended, we have early autumnal frosts, before the corn is cut, or is ripe, not only serious injury will accrue to the grain, from the functions of the stalk being wholly destroyed by the frost, but the forage will be greatly impaired in quality. Cut as we recommend, the corn *will* mature on the stalk, and the stalks will receive no injury from the frost. Try it.

Turnips must not only be kept free from weeds, but if not already done, they must be thinned so as not to remain nearer than six to ten inches apart, according to the size they are expected to grow. They will not bottom if they are crowded, whatever be the condition of the soil, or the species or variety cultivated.

Skinless Oats.—We sowed two quarts of skinless oats, in drills, one foot apart. The crop has been gathered, threshed and measured. The product is 40 quarts, and the bushel weighs 41 lbs. Several circumstances prevented a better yield. The ground was too light, being a sand; the seed was sown late; the soil was too rich, as the grain lodged, and the portion which grew under two early apple trees was wholly trodden down.

The Grain Worm.—It has been remarked to us by several farmers, that early sown wheat was much less injured by the grain worm, than that which was sown late. This fact should induce early sowing, wherever it is practicable.

CORRESPONDENCE.

IMPROVED CHINA HOGS.

Mr. Buel,—Sir—This superior breed of swine, as I have observed in a former communication, was first introduced here by the late Christopher Dunn Esq. Some ten or twelve years since, when passing through Princeton or New-Brunswick, N. J. in the stage, his sagacious eye was attracted by a beautiful sow with her litter of pigs, running in the street. Delighted with their appearance, he was determined to possess some of them if possible. He accordingly applied to the driver of the stage to procure a pair of them for him. As an inducement, and to ensure success, he offered him the liberal price of twenty dollars, for a male and female, although only eight weeks old, on their delivery to a certain house in New-York. They were of course procured and delivered, and from these two have sprung my "*Improved China Hogs.*"

Their colour is various, some white, black and white spotted, and others blue and white. They are longer in body than the pure China breed. Upright or mouse-eared—small head and legs—broad on the back, round bodied, and hams well let down. Skin thin—flesh delicate and fine flavored.

They are easy keepers, and of course small consumers, quiet and peaceable in disposition, seldom roaming or committing depredations. Keep in good condition on grass only.

They are not remarkable for size, seldom attaining more than 200 to 250 pounds although instances have occured where they have been made to reach 350! Therefore they cannot, in their pure state, be called the "farmer's hog," but their great value is in crossing with the common hog of the country. A very good hog may be obtained by a cross with your *land shads*,—your long legged, long nosed, big boned, thin backed, slab-sided, hungry, ravenous, roaming tormentors, that will run squeaking about the yard with an ear of corn in their mouths.

To give you some idea in what estimation they are held by persons who have procured them of me, I have taken the liberty of making the following extracts from some of their letters.

"My Chinas, the true *Bement* breed, exceed all praise; you never saw their equals. I have a young boar in the pen, nine months old, that I will show against the United States, out of the boar and sow I had of you, both of which I still keep. Nothing can compare with them in this country, and I honestly assure you, I never saw their equals any where, for all needful qualities in the hog."

"Dear sir—I have the satisfaction of saying to you, that I got my little Berkshire and China home in good order, and doing finely, and are much admired by every person who sees them. Should I meet with success in rearing from this pair, I shall not be able to furnish any thing like the quantity spoken for."

In another letter a valuable correspondent says—"The hogs I had of you have done admirably, and I am getting a fine stock of them: but on the whole, I like the full bred improved China better than the cross, and I am getting into the pure blood. The young sows, of which I have three from the white (Hosack) boar you had, have had pigs from the old boar, but they are not true enough in blood, appearance and shape to suit me; whereas the mother, who is the true China, brings the pigs from the old boar, both in colour, shape, size and every thing, as if they were cast in the same mould,—and that is what I like,—uniformity of appearance, even in hogs, and this boar, let me tell you, has the admiration of all who have seen him, as the best and most perfect *hog* in the country. These hogs, 'tis true, are not large, they are indeed rather small; but they are the easiest kept of any according to their size, that I ever saw, and so far as I have yet seen, I prefer them, even to the Bedfords, or any I know. The Bedfords are good, but they are too heavy headed, long legged, and great eaters to suit me altogether. The quiet, peaceable dispositions of the Chinas, like that of the short horn cattle, is a great item, I assure you in a farmer's account."

I might fill a page with similar extracts, but I think it unnecessary, for I shall not be able to supply all my orders until next spring.

In the next No. I propose to furnish you with a portrait of one of the Berkshire breed, of which I am now in possession, imported by S. Hawes, in 1832.

C. N. BEMENT.

Albany, September 1st, 1835.

CISTERNS.

Mr. Buel.—In the June number of the Cultivator, was published a short article on the subject of cisterns, in reply, as declared, to a question of a correspondent. Your readers may perhaps be willing to take some farther hints upon the same subject, especially such as know the value of rain water, and would know the means of its perfect preservation. Although the method of building cisterns there suggested, will, in many instances, be entirely successful, I propose to offer a reason or two, founded not only upon theory, but some experience and observation, to show that cisterns thus built are liable to fail of answering the desired end: and also, to give the outline of a new plan of constructing them, now fairly tested, that is calculated to avoid the defects of many kinds of cisterns differently constructed, and to lessen the expense of construction.

To build a brick cistern to contain about 40 barrels, the walls of which shall be laid in common lime mortar, with an inside face or plastering of water lime, the expense in this neighborhood would be as follows. That it may be of the above mentioned capacity, it must be built about six feet deep and six feet square—or contain 216 cubic feet. To construct the walls of such a cistern, the thickness of which shall be the length of one brick, are requisite about 3,500 bricks at $4, ... $14 00
20 bushels of lime, at 2s. 5 00
Two loads of sand and drawing at 3s. 75
1 barrel water lime for facing at 10s. 1 25
Mechanic for building 4 days, at 12s. 6 00
Tender for building 4 days, at 6s. 3 00
Materials for covering and curb to draw water. 2 00

$32 00

No calculation is here made for digging the pit, as this must vary with the soil and situation, and be nearly alike for all kinds of cisterns of the same capacity.

This is the cheapest way, perhaps, of making a brick cistern, the wall being the thinnest practicable; but it will be seen that cisterns having walls of double thickness, (which are frequently made, and are by some

considered cheapest in the end,) would cost nearly double the above account, which expense is a great obstacle in the way of the general use of cisterns, in obtaining one of the greatest comforts, not to say luxuries of life, an abundance of pure rain water.

Objections to the utility of such a cistern are, that the common lime, unless the water lime facing be entirely impervious, will affect the water by creating *hardness*, as it is generally called, for a long time; and moreover it is difficult to make a cement of that material that will hold water, especially when united with brick or any substance, that so readily conducts water.

And the bricks extending quite through the wall, as in the case of the thinnest wall, I do not believe it could be made to hold water by any means, without facing, there being so many crevices under the bricks occasioned by the settling of the mortar from underneath them when the wall is constructing; then the dependence for holding water must be upon the water lime facing, and this is very uncertain, for a slight frost, and frequently a few months standing and use will cause such a facing to cleave off from any other substance that may be plastered or faced by it; and this facing being necessarily so thin, it is often the case, that for one or another of these causes the cistern cannot be made to hold water. In the vicinity of this village there have been made many cisterns of stone and water lime in various methods, and this has been done for many years. But an improvement made by two respectable mechanics of this place, about two years since, has superseded every other plan attempted among us, and reduced the cost to a sum that any householder can afford, for the certainty of enjoying the common use of rain water. They have procured a patent for the improvement, but there is no secret in the operation of constructing their cisterns. A false curve is made of staves that fasten or link together in some way, and this is set up like a tub in the pit, which is dug in a well-form, that is circular to the proper depth, and about one foot in diameter larger than the curve, and after placing the curve in the pit, the space between it and the bank or earth is filled with fragments of stones, cobbles, brick-bats, cinders or almost any hard material crumbled into pieces of four inches or less diameter; a quantity of water lime is then mixed with sand in the usual proportions for making mortar, but of a consistency of grout or puddle, and the compound poured into the space. It runs through the whole to the bottom, and fills all the crevices and the entire vacuum left between the curve and the earth. When this becomes set, as they term the partial induration of the mortar, the curves is removed, and the wall while yet in a green or soft state, is faced or smoothed, and the bottom made with nearly the like materials. It is then covered and completed, and in a few days is fit to receive the water.

Now there is no quick lime used in the construction, which obviates one difficulty above mentioned, there is nothing to conduct the water through the wall to make it leak, no stone or other substance extending through it. It soon becomes hard as stone, and must endure, with proper care to guard against frost, (which will break rocks) as long as time. Cheapness and utility are great desiderata of this age of improvement. This cistern is certainly equal if not superior to any other ever made for holding and preserving the purity of rain water; and one constructed six feet in diameter and the same depth, holding about 35 barrels, costs here 15 to $17. Besides, the builders warrant them to hold water; and all know who are acquainted with the nature of hydraulic cement, that when it once holds water for a short time, it is forever. Indeed out of 200 cisterns and reservoirs that have been built upon the "pattern curve" plan, as it is called, not one as I have heard has failed to hold water from the time of its completion hitherto.

The expense of this kind of cistern it must be perceived, is comparitively small, and that will of course vary according to the price of water lime where it is used—a cistern of the last named dimensions requiring about three barrels in all. They may be made with equal convenience of any shape or size, and the proportional expense is diminished in building large resorvoirs. I have a cistern built upon the old plan, with a thick stone wall, of about 35 barrels capacity, that cost $40. I have another built upon the "pattern curve" plan of the same capacity, and most perfectly finished, that cost about $15. They are both good cisterns, and I do not hesitate to use the water (when conducted into them clean) for family purposes, cooking, &c. And I think I could give some good reasons, why it is better for such uses than spring water of this limy region. But this may perhaps be done hereafter. Yours,

A FRIEND TO IMPROVEMENT.

Note.—To know how much a cylindrical or circular cistern of given dimensions will hold, multiply one-half the diameter into one-half the circumference, and that product into the depth, or the square of the diameter into the decimal 7,854—which will give the number of cubic or solid feet. By statute, one cubic foot of distilled water weighs 62½ lbs., and ten pounds make a gallon, so that multiplying the number of cubic feet by 62½ and dividing by 10 will give the gallons.

ON SEEDING.

Of all the practices constituting good husbandry, none are more replete with beneficial effect, and which better repay the outlay than that of seeding. It has become an established practice with good farmers to seed frequently with clover and timothy, a practice that should be adopted by all. It is high time that the practices and opinions of our ancestors—those which derogate from our best interests I mean—should give place to more modern and more rational views. That there has been great advancement in the science of agriculture will be conceded to by all; then why do we cling so strenuously to ancient practices when those of more modern date are infinitely superior.

I rejoice in the improvement that has been already made. Agriculture has become the theme of the day. The most enlightened of our citizens are embarking in its pursuits, which give assurances of its being ultimately established upon a basis concomitant with its merits. Then it behooves us to follow those practices most clearly demonstrated to be beneficial—and believing seeding to be one of these, I proceed briefly to detail its utility.

The practice of seeding is too much neglected by many of our farmers, a practice, which, could they be induced to adopt, I am confident in believing would not be relinquished. The natural grasses yield less of quantity and nutriment than either clover or timothy and some others of more recent introduction. Double the quantity of pasture may be obtained from a given piece of ground well seeded, than it would otherwise afford; and for mowing there will be a still greater difference.

Independent of this, its fertilizing properties to the soil must be considered. A good sod preserves the soil from the too great influence of the sun, renders it porous, and consequently pervious to atmospheric nourishment; hence we observe that meadows newly laid down almost invariably bear the greatest burden.

Whereas grounds not seeded, by being too much exposed, soon become of so compact a nature as to render them in a degree impervious to either heat or moisture, without which they cannot be capable of the least productiveness.

Autumn we considered the most proper time for sowing timothy, and the spring for clover. We have generally made it a practice to sow our timothy immediately after the last harrowing in of the wheat, having a person to follow each harrow, which leaves not a particle of ground without seed, and never have perceived the wheat to have been injured in consequence.

The time for sowing clover must depend altogether on the season whether early or backward. We have oftener sown too early than too late, and I am inclined to believe that others have fallen into the same error.

In my opinion, it should not be sown until the ground begins to dry and become settled, when it will be observed there are enumerable small crevices produced by the contraction of the earth, which will receive the seeds, and which the first rains will close, thereby producing immediate vegetation. Respectfully submitted, by

GEO. WILLETS.

Skaneateles, Ond. co. 8th mo. 17th, 1835.

TICKS UPON SHEEP.

J. Buel, Esq.—Sir—In the July number of the Cultivator you gave some directions for removing ticks from lambs. To this method there are objections: there will always be some ticks on the sheep, which will there stay, or remove to the lambs after the first few showers of rain; and I have known it when the liquor was strong, to kill the lambs as well as the ticks; besides, the lambs must suffer a great deal before the bathing.

My object is not to find fault, but to give you the method I have followed for seventeen or eighteen years. Take, (say for 50 sheep) two pounds tobacco, damaged tobacco will do, or the stems or liquor pressed out at the tobaconists; soak in two gallons stale urine for four or five days, squeeze out and strain the liquor off, put into a pot over a moderate fire five quarts good tar, ten quarts damaged lard, butter, or clean soap grease, stir with a stick until well mixed or melted, then pour it into the tobacco liquor, mixing it thoroughly; have in reserve about thirty quarts old butter-milk or urine, which pour into the first mixture, and when about blood warm, take a sheep, lay it on its left side on a broad bench before you, the head towards you, make a shed, or opening of the wool about four inches from, and parallel with the back bone, the whole length of the animal, commencing at the head; then let a boy pour a little of the mixture on the skin all along this opening, beginning at the head; then turn the sheep a little more on the back, and make a second shed or opening four or five inches from, and parallel with the first, and pour on as before; repeating the shedding and opening until you come to the back bone on the other side, always smoothing up the wool and keeping the animal in that position that the liquor will run to the skin, and not out on the wool: when finished, let the animal stand up, and make a cross shed about the middle, when if properly done, you will find the liquor has run all over the skin. For dipping up and pouring I use a tin quart measure with a lip or spout like a pitcher, covered about half over, leaving an opening at the point of the lip large enough to admit a goose quill, to prevent its pouring too fast or spilling all over the wool. A quart on an average is enough for each sheep. The proper time for this operation is the first warm dry day from the middle of Feb. to the middle of March, allowing the ewes to lamb the 15th or 20th of April.

There are many reasons in favor of this mixture, and time of applying

it. The ingredients used, improve the health of the animal, prevent and even cure the scurvy, improve the quality and increase the quantity of the wool, and when shearing time comes, you will find the skin smooth and clean, and not a single tick on sheep or lamb. Some may think it will injure the wool: it is not so; for manufacturers who have used it, say to the contrary, and it has of late years come much into use amongst the more intelligent sheep graziers in the west of Scotland.

I have been something lengthy in the direction of the mixture and the application of it, being more accustomed to handle the sheep-shears and the plough, than the pen; but I leave to your better judgment and practised pen, to give a shorter *version*, if you think it worth insertion in the Cultivator. A SUBSCRIBER.

Johnstown, Montgomery Co. Aug. 3, 1835.

RIDGING—POTATOES.

Hyde-Park, Aug. 3, 1835.

J. Buel—Dear Sir—In the perusal of your valuable agricultural publication, *The Cultivator*—Vol. 2, page 68, I noticed extracts from *Lorain's* Husbandry, explaining the injury done by ridging and moulding up plants, &c, and the great advantages derived from a very level and superficial cultivation. I beg you will not think it presumption in stating my views on this important subject. It appears from my limited knowledge of agriculture, this great agriculturist has given too great scope to his theory or practice, or is unacquainted with the great variety of situations and soils in Great Britain and America, which are now producing the most abundant crops of grain, &c. from the ridge system. In many parts of the county of Essex (Great Britain,) it would be impossible to produce a crop, by his level and superficial mode of cultivation, and the most abundant produce are obtained by the four furrow ridge system of cultivation. The extract states that ridging and moulding up plants is as much opposed to reason and observation, as it is to the economy of nature. I admit this to be the case with some plants, situations and soils, but to others, the ridging and moulding in a proper degree is necessary to the production of abundant crops. It also states the evils arising from it are many and great, as it compels the plants to form new sets of shoots, so often as they are ridged or moulded up, and that the roots cease to perform their functions when buried too deep. I beg the favor of your information as to the depth which will prevent the potato from performing their functions,—having been successful in the cultivation of potatoes, turnips, and cabbages, for the use of stock, all upon the ridge. From the scanty knowledge of soils I have acquired, I know of no uniform given depth; this must be guided by the agricultural skill and knowledge of soils, which is indispensable and must be the chief corner stone of the practical and scientific agriculturist. I attribute the success and abundant crops of potatoes and turnips, growed by E. Holbrook, Esq., to his ridging system, here represented to be the occason of so many and great evils. My agricultural views differing from so great an agriculturist induces me briefly to state our practice and motives for the ridge system, that we with thanks may receive through the medium of your publication from some able and practical cultivator, better information on the subject, and thereby benefit the *agriculturist*.

If we intend to grow a crop of potatoes, turnips, or cabbages, on old mowing ground, we carefully trench plough the land according to the properties of the soil, as soon as spring will admit: and when it has received a few slight frosts, it is harrowed down, and is now a level bed of mould. We then with a double breast plough furrow out the ridges two feet apart, and about three or four inches deep. The potatoes, cut and rolled in lime and plaster, we proceed to plant thus in the furrows, . · . · . the dots here marked being one foot apart, and showing one extra in the intermediate space between the ridges, being a gain of 50 per cent by this mode of cultivation, as no more ground is used than in the ordinary mode of ridging. A dung cart follows, and as soon as four furrows are planted, the man throws from his cart common barn yard manure upon the potatoes, which is adjusted by a boy evenly over them. As soon as a few rows are covered with manure, and before the sun has power to evaporate the moisture from the manure, a plough covers it up by ploughing two ridging furrows upon them. They remain thus two or three days, to settle down, when a roller is passed over them, and then a light harrow of a proper construction, which again brings the land to a level surface, and the sets will come up simultaneously. When out of the ground about four inches, the first producing root is formed with its extending feeding roots. We then with a small light one horse plough, mould them up about two or three inches, when they will again near the surface put forward (not by mutilation) another set of producing shoots with their extending fibres or feeding roots, which spread horizontally along the mould of the ridge, then turning perpendicular downward to receive the moisture and substance that passes from the manure which is in the centre of the ridge, and by its gradual decomposition leaves the soil loose and enables the potatoes freely to produce in quantity and size. We repeat this operation, say three or four times if possible, before the potato blossom appears. In each operation we are careful not to mutilate or disturb the feeding roots already moulded up: to prevent this, we use three different size ploughs until the operation is completed. In 1833, E. Holbrook, Esq., Hyde-Park, produced the extraordinary crop of upwards of 750 bushels of potatoes per acre—a pretty clear demonstration. If the ridging and moulding up certain plants, originated in barbarism, the enlightened cultivator, *Lorain*, has not or will not, advance us far in the march of improvement in the beautiful science of agriculture, with his level and very superficial cultivation, by totally excluding from the field the ridging and moulding science of agriculture.

Excuse my brevity on the subject, as time will not permit me more fully to detail, having the superintendence of the estate of E. Holbrook, Esq. to attend to. Yours, with great respect,

THOS. MIDFORD.

P. S. If this feeble attempt to explain my views on the subject, is worth your perusal or notice, it is at your service and use.

Mr. J. Buel—Sir—Observing in your interesting and highly valuable work some observations by T. A. Knight, Esq. as taken from the British Farmers' Magazine, and given in the 2d No. of Vol. 2, on the cultivation of the potato, I would just here remark, that with these observations, *so far as they went*, I was exceedingly well pleased. It was observed in a former No. of the Cultivator, that the potato was long kept back by prejudice and ignorance. To some little extent is it so still; (witness the lucubrations of Cobbett,) but these are fast dispelling, and the community are indebted to every one, who will communicate useful knowledge on that or any other branch of what I would call the staple trade of mankind—agriculture. T. A. Knight justly remarks of the potato that "it has long been known that every variety cultivated gradually becomes debilitated and loses a large portion of its powers of producing;" but unfortunately stops there, and leaves the less erudite, though no less ardent lover of agricultural knowledge in the dark as to the proper means of producing these new varieties which ought to take the place of those that have served their day, and are unfit for use. I know that potatoes can be raised from the seed, and take it for granted that is the way that new varieties are intended to be produced; and if I am right in this supposition, would you or any of your worthy correspondents spare a few lines on the subject of raising potatoes from the seed? There must be many things connected with this which it is important to know, so as to produce the best result; as from what sort of parent the seeds are to be selected; the best way of preparing and preserving the seed; the cultivation thereof; and selection of such varieties as may be best expected to suit the purpose of the cultivator or consumer, both as to their probable value for quantity and quality. How long will it require to bring the potato from the seed to a state of maturity so as to be fit for market or stock? How long may it be expected to remain good without declining by age? What influence has changing the soil, i. e. changing the cultivation of them from one soil to another, upon the plant? Perhaps it may be thought by some that the article in question is too unimportant to merit much attention. I think otherwise; it does not indeed rank with wheat or corn, but it is important enough both in the feeding of cattle and for domestic use to demand all the attention that can reasonably be bestowed upon it.

Happening to have been once in the "old country," and looking around upon any thing that might profit or amuse, I was particularly taken up with the high state of agricultural improvement which prevails there, and among other things, with the *quality* of the potato. *There* it is *good* food; and I know of no reason why it may not be cultivated to as good purpose both as to quantity and quality, in this as in that country; and any information you can give on the best mode of producing new varieties, will, I am persuaded, be highly acceptable to many of your readers, and to none more than AN AGRICULTURIST.

Massachusetts, July, 1835.

P. S. I would like to have your or some of your correspondents' opinion on Mangel Wurzel.

BY THE CONDUCTOR.

There is nothing peculiar in raising the potato from seed, more than any other plant. The quality of the offspring will, like that of all animals and vegetables, partake of the character of its parents. Of course the seed should be selected from the best varieties, as we shall be then sure of breeding from *one* good stock. It may be separated from the pulp of the ball and dried, or the balls may be broken and dried, to be sown in the spring. They should be kept from frost and moisture. At the usual planting time prepare a bed of good mould, and sow the seeds thinly on it in drills 18 inches apart. Nurse the plants as you would a bed of onions; and in autumn take up and preserve the small tubers of each plant separate. Plant the second year at the distance of 18 inches or two feet each way, nurse as before; and you will be able to judge from the product, and their time of ripening, of their character and quality. Plant your selected kinds a third year, and the crop will be fit for market or stock. The superiority which our correspondent discovers in "old country" potatoes, is not wholly owing to new varieties, but to climate. In our country we think the potato deteriorates south of latitude 41, and perhaps the best potato zone may be comprised between latitudes 41 and 46 deg. north. The latitude of Britain is still farther north, though its climate is more temperate than ours. In our latitude, in ordinary seasons, the best potatoes are grown on grounds that are deemed cold, as reclaimed swamps, &c. The best potatoes are grown in Ireland, Lancashire, Eng. in Nova Scotia, Maine, &c. where the temperature is comparatively cool, and at the same time very hu-

mid. The duration of a variety, in perfection, is generally computed at from 14 to 20 years, though this period is sometimes prolonged by a change of soil or climate. The nutritious properties of the potato have been proved to vary from 14 to 28 per cent in different species. Those abounding most in nutriment are invariably the best not only for the table, but for farm stock; but they seldom if ever exceed a medium size, and are less productive than coarse kinds. Hence as buyers make little or no distinction, the grower finds it most profitable to raise the latter.

CONDITION OF HUSBANDRY IN THE VALLEY OF THE MOHAWK.

Palatine Bridge, 21st Aug. 1835.

Dear Sir—Have you white Mulberry trees (Morus Alba) in your nursery? And at what price can I obtain say 100? What is the proper period for setting them out? [We have the white mulberry at $5 per hundred. They may be planted in the spring or summer.]

I have prepared a seed bed; and I propose while the young trees are growing, to set out a few, that I may, upon a small scale, learn the art of managing the worms.

I continue to receive and read the "Cultivator;" and I can assure you that the information I have derived from it, has been in the highest degree serviceable to me in my farming operations. Could this valuable periodical be generally diffused and read by the farmers in this region, I am well satisfied that it would contribute more than any one thing to make this one of the most flourishing agricultural districts in the state. There can be no better soil than that found in the valley of the Mohawk, and the adjacent country, on both sides of the river. But it is a fact, that the great majority of our farmers, so far from improving the advantages that nature has conferred upon them, and being in a thriving condition, are *retrogading*. They are so wedded to the "old system," that it is extremely difficult to make them believe that there is a *better one*. And although their lands are becoming less and less productive every succeeding year, they still believe themselves masters of their profession. Suggestions about *improved farming* are regarded with distrust; and he who attempts to teach doctrines at variance with their received opinions, must expect to meet with no very welcome reception; and should he have the moral courage to pronounce their opinions and practice altogether wrong, and in the end promising nothing but bankruptcy and ruin, he would be regarded as a deranged man. To these general remarks, there are some exceptions, and I am well satisfied that these exceptions would very soon compose the majority, if the "Cultivator" should be diffused and its suggestions adopted. Then the very individuals whose business, there can be no doubt, does not now pay them four per cent upon their capital, would find that their investments were producing a nett annual income of from ten to fourteen.

I think I am safe in saying, that the lands in my immediate neighborhood are worth at least twenty-five per cent less for agricultural purposes at this day, than they were ten years ago. Crop after crop, and that without much regard to rotation, has been taken from them till they have become exhausted; and the consequence is, that instead of abundant harvests, the husbandman's toil is usually rewarded with but a scanty increase—I mean a scanty increase, in comparison to what it should be, when the quantity of land and the amount of labor are taken into the account.—Many of our farmers, to be sure, raise large crops, but in most instances, where this is the case it will be found judging from what has been done under a proper system of management, that these same crops should have been taken from one-third of the quantity of land that actually produced them; and what the consequence must be in a few years more, if this ruinous system is continued, it is no difficult matter to determine. The same system, if it was universal, would bring ruin upon the nation. Whoever then shall, either by his pen or his practice, contribute any thing to exterminate the evil, will be justly entitled to the appellation of a public benefactor.

But I have spun out my epistle to a length I did not at all anticipate when I sat down to make inquiries about mulberry trees. You will however excuse me, as agriculture is a subject upon which we feel a common interest.

I think I shall ere long be able to send you a list of subscribers for the Cultivator. I have spoken to several individuals on the subject, and they have promised to take it.

Respectfully yours,
JOHN FREY.

By the Conductor.—We are in doubt whether Mr. Frey intended his letter for publication; but it contains such just remarks in regard to the apathy of our farmers as to the benefits of modern improvements in husbandry, and the deteriorating effects upon our farms of the old system of management, that we feel justified in giving it publicity.

UNDER-DRAINING—CORN.

Greenwich, Ct. Aug. 21, 1835.

Sir—As a subscriber to the Cultivator, I am satisfied that it is calculated to advance the interest of the practical farmer.

I am willing to contribute my mite to help forward the improvement of the farmer's mind and soil. If you have a spare number for April, I should feel obliged if you would send me one, as none were received at the post-office in this place of that number.

I am satisfied that the mode of under draining recommended in the March number, is correct as respects springs. But there is another case somewhat different. I refer to the oozing near shelving rocks, after heavy rains. In this case it is important to place the drains in such a manner as to prepare the ground to receive the greatest quantity of water possible. This is done by making the drains as near level with the outlet as possible; and thus removing the standing water to a considerable depth, say four or five feet.

In Mr. Clark's table, showing the produce of corn at different distances, the kind of corn planted is not stated. This is a very important point in the culture of corn, as some kinds require near double the distance of others. The kind I have planted for 35 years, I think will yield most at about five feet distance between the hills each way, where the ground is very rich. On our common land, without manure, I wish to plant from three feet nine inches, to four feet each way. This kind is the large eight row dented-yellow. I suppose I have had 80 bushels of shelled corn from an acre without manure; but this is not common. We call from 40 upwards, a good crop. As I have never made any nice experiments and measurements, I do not pretend to precision.

But the particular point to which I would call the attention of my brother farmers, is the selection of seed corn. In the June number of the Cultivator, is an article headed, "The Corn Crop," stating a number of experiments and observations. An observation on the 2d experiment, is that to which I would turn the attention of all, that it may be fully tested. The observation to which I allude, supposes that the particular kind there mentioned, although the most prolific, had "deteriorated by planting from inferior ears."

Now I wish every farmer that takes the Cultivator, would go into his corn-field as soon as the corn is generally too hard to boil or when the forwardest ears begin to turn yellow, with two baskets, and select from the stalks that bear two ears each, putting the upper ear in one basket, and the lower one in the other, leaving the husk on till he brings the corn home, then strip up the husk and either tie them across a pole or braid them into a trace, as some term it, and next spring plant each separate; note exactly the produce of each, and give the result to the conductor of the Cultivator. I have tried it on a small scale some twenty-five years ago, and am satisfied for myself; but I have found that telling my experiments is not so good a way as to induce others to try; then they will know.

JAMES MEAD.

Enfield, Ct. Aug. 18, 1835.

Dear Sir—I have now growing on my lot 2 or 300 Quince bushes, some in a bearing state, when not injured by frosts, but mostly quite small. I have been looking for some information in the papers respecting trimming them, by some person who had made a sufficient trial to know whether best to trim or not. I find where I have thinned them at the bottom, the new sprouts come out two or three fold in number. I am yet a little short of sixty, but think, however, I am not too old to learn from your valuable paper, when it treats upon the small things in farming, such as I do.

Very respectfully, yours,
GEER TERRY.

By the Conductor.—The Quince is sometimes trained on a single stem; but the better and more common way is to train two, three or four stocks from the same root. The shrub requires very little pruning, except the removal of dead wood, superfluous sprouts and branches that are likely to cross and interfere with each other. We advise to prune in July, to prevent the multiplication of sprouts. Dead wood may be removed at any season. We advise our correspondent to bud a part of his stocks with butter or melting pears, as dwarfs. It Improves the quality of many kinds, and brings them early into a bearing state.

Sandisfield, Mass. June 28, 1835.

Mr. Buel,—Sir—The opinion seems well established, that the sheep worm or grub which occasions the annual loss of large numbers of fine sheep, is generated by the deposite of the eggs of a fly on or in the nostrils of the sheep during the hot months; but I have been led to doubt the fact—and hope some of the observing breeders and wool growers will ascertain the present season, if the eggs of the fly are, or are not deposited in a thin cavity *near the eye*. If my suspicions prove true, I trust the inventive skill of Yankees, or others, will not be long in devising a remedy as efficient, at least, *as tar on the nose*. Very respectfully, &c.

GEO. HULL.

Canaan Centre, Aug. 10th, 1835.

J. Buel, Esq.—Sir—I trouble you with this note to solicit information as to the best method of making and preserving cider; and as there are different ways of managing, I think the publication in the Cultivator, of some of the most approved modes, would be useful to many of your subscribers as well as to myself. Yours respectfully,

[For answer see p. 90.] DANIEL S. CURTIS.

"*Education*—A better safeguard for liberty than a standing army. If we retrench the wages of the school-master, we must raise the wages of the recruiting sergeant."—*Edward Everett's Toast*.

Miscellaneous.

From Low's Elements of Practical Agriculture.

SHEEP.—THE SOUTHDOWN.

The Southdown is a breed of fine-wolled sheep, now greatly esteemed, and extensively diffused on the light soils and chalky downs of England. They are without horns; their legs and faces are gray, and, like the sheep of the mountains, they are light in their fore-quarters. Their wool is fine and short, being from 2 to 3 inches in length, and weighing, on an average, about 2½ lbs the fleece. Their flesh is of excellent flavor; they are a hardy class of sheep, kindly feeders, and well suited to the species of pasture on which they are chiefly reared; they are about the size of the Cheviot sheep, the wethers, when fat, weighing about 18 lb. the quarter.

These sheep have been reared from time immemorial upon the chalky soils of Sussex; they have spread into other districts of light soils and downs, and also into some to which they are not adapted.

Much care has been bestowed on the cultivation of this breed, and it has accordingly been greatly improved; but attention having been mainly directed to the form and fattening properties of the animals, the quality of the wool has declined, though its quantity has increased.

MERINO.

In the class of fine-woolled sheep is the Merino or Spanish breed, now partially naturalized. They were originally natives of the northern provinces of Spain, and were introduced into this country in the year 1783. In the year of 1792 the rams were made to cross the Ryeland, the Southdown, and other fine-wo led breeds of England. His Majesty King George III. had introduced rams of the Merino breed from Spain, and cultivated it with care. In the year 1804, the sales which then began of his Majesty's stock attracted great attention to the breed; and, in the year 1811, a society was formed for the purpose of encouraging and extending it.

The result of the crosses with the native sheep has not in any degree fulfilled the expectations formed. The wool of the native sheep has indeed been improved in quality; but this has been accompanied by defects in the characters of the animals themselves not to be compensated by the increased value of the fleece. The sheep of the mixed breed have nearly all proved defected in their forms, slow feeders, and less hardy than the parent stock.

DISHLEY.

The improved Dishley breed is very generally termed the New Leicester, from having been formed by Mr. Bakewell of Dishley, in the county of Leicester. This gentleman was the son of a considerable farmer; and, about the year 1755, had begun to turn his attention to those improvements in the form of feeding animals, by which he came so distinguished. The precise steps which he followed in the forming of his breed of sheep are not known, as he chose to observe a species of mystery upon the subject. He is supposed to have derived his first sheep from Lincolnshire: but however this may be, it was by a steady breeding from the best-formed animals, until the properties aimed at had been acquired, that he gradually corrected the defects, and improved the form of the animals. He was well aware of the external characters which indicate a disposition to feed, and, by a steady course of selection continued during a lifetime, he obtained animals of superior feeding properties to any that had been before cultivated. By constantly breeding, too, from individuals of his own flock, and consequently near of blood to each other, he gave a permanence to the characters of his breed which it retains to the present hour. Mr. Bakewell adopted the practice of letting out his rams for the season, and this contributed to the general diffusion of his breed. Successors to Mr. Bakewell have continued the same system, and bestowed the utmost care in maintaining the purity of their flocks; and thus from the county of Leicester as a centre, this breed has been spread to every part of England, where the breeders have thought fit to receive it; and it has entirely changed the character of the greater part of the long-woolled breeds of this kingdom.

The sheep of the new Leicester breed are inferior in size to the other varieties which they have supplanted. The wool is but of moderate quality, & in weight it falls short of that of the larger breeds: it weighs from 7 to 8lb. and has a length of pile of from 5 to 7 inches. The value of the breed, therefore, does not consist in the size of the individuals, or the quality or abundance of their wool, but in early maturity, and aptitude to feed. In this latter property, the New Leicester has not been surpassed or equalled by any other breed of cultivated sheep.

IMPROVEMENT OF BREEDS.

The breed of sheep to be reared in any case must be selected according to the nature of the pastures, and the artificial means possessed of supplying food. If a mountain breed is selected for rearing on a low arable farm, then the advantage is lost which the farm possesses of producing a larger and finer class of animals. If, on the other hand, a lowland breed is carried to a mountain farm, an error of a different kind, but yet more hurtful, is committed: for a fine stock will be ruined if placed in circumstances where it cannot be maintained.

The breed, then, being selected which is the best suited to the circumstances in which it is to be placed, the province of the breeder is to breed from the best individuals.

Disposition to feed, and early maturity, are the properties most regarded in sheep to be reared for food. But the property of yielding good and abundant wool is not to be disregarded; and there is another property essential in the rearing of this class of animals, namely, hardiness and sound health of individuals.

In the case of the sheep as of the ox, refinement in breeding may be carried too far, and with more danger. By breeding from animals near of blood, the same means exist in the case of the sheep as of the ox, of giving that prematurity of age which produces fineness of the bones and a disposition to feed. But it is attended too with the same effect, of rendering the animals more delicate, and subject to diseases. It seems a violence done to nature, when carried too far, and the animals show the effects of it by becoming too fine in their skins, by ceasing to produce wool in sufficient quantity, by the females ceasing to yield milk, and by males becoming at length unable to continue their species.

Whenever, then, the sheep of any flock become too near of blood, the breeder should resort to the best animals of another family, but of the same breed, to continue his stock. This species of crossing is now easy, since there is scarce any of the cultivated breeds of which superior males may not be procured from other flocks. In the case of the new Leicester, so widely diffused and highly improved, no necessity can exist for breeding from animals too nearly allied.

FORM.

In the sheep, as in other animals, certain external characters indicate a disposition to feed, and at an early age. Other characters indicate a disposition to produce wool, and the quantity of wool, it has been said, is not to be disregarded in the rearing of the sheep. But the main purpose in rearing the sheep in this country being for food, the province of the breeder is to accomplish this object with as little sacrifice as possible of the secondary qualities.

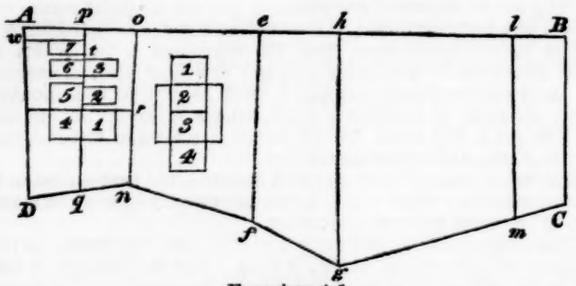
A property that indicates a tendency to feed in the sheep as in the ox, is a general rotundity of form and fineness of the bones. The chest should be broad, the ribs well arched, and the back and loins accordingly broad, flat, and straight. The sheep, like the ox, occupies, independently of the neck and head, nearly a rectangle, and the larger the proportion of this rectangle which the body occupies, the more perfect is his form as a feeding animal. His body, therefore, should be large in proportion to his limbs, or, in other words, his limbs should be short in proportion to his body; his breast should be well forward, and his belly straight; his head should be small and his ears thin; his limbs to the joint should be fleshy, below delicate and covered with short hair: his skin should be soft and elastic; his wool soft to the touch, thick, and coming well forward to the face, but not covering it: his face and forehead should be covered thickly with short hair, and his eyes, as indicative of health, should be lively.

From Ruffin's Essay on Calcareous Manures.

EXPERIMENTS IN MARLING.—*Continued.*

As most of the experiments on new land were made on a single piece of twenty-six acres a general description or plan of the whole, will enable me to be better understood, as well as to be more concise, by references being made to the annexed figure. It forms part of the ridge lying between James River, and the nearest stream running into Powell's Creek. The surface is nearly level. The soil in its natural state very si-

milar throughout, but the part next to the line B C somewhat more sandy, and more productive in corn, than the part next to A D—and in like manner, it is lighter along A *e*, than nearer to D *f*. The whole soil, a gray silicious acid loam, not more than two inches deep at first, resting on a yellowish sandy subsoil from one to two feet deep, when it changes to clay. Natural growth mostly pine—next in quantity oaks of different kinds—a little of dogwood and chinquepin—whortleberry bushels throughout in plenty. The quality of the soil is better than the average of ridge lands in general.



Experiment 1.

The part B C *g h*, about 11 acres, grubbed and cut down in the winter of 1814—15; suffered to lie three years with most of the wood and brush on it. February 1818, my earliest application of marl was made on B C *m l*, about 2½ acres. Marl 33-100 of calcareous earth, and the balance silicious sand, except a very small proportion of clay: the shelly matter finely divided. Quantity of marl to the acre, one hundred and twenty-five to two hundred heaped bushels. The whole B C *g h* coultered, and planted in its first crop of corn.

Results.—1818.—The corn on the marled land, evidently much better—supposed difference, forty per cent.

1819.—In wheat. The difference as great, perhaps more so—particularly to be remarked from the commencement to the end of the winter, by the marled part preserving a green colour, while the remainder was seldom visible from a short distance, and by the spring, stood much thinner, from the greater number of plants having been killed. The line of separation very perceptible through both crops.

1820.—At rest. During the summer marled all B C *g h*, at the rate of five hundred bushels, without excepting the space before covered, and a small part of that made as heavy as one thousand bushels, counting both dressings. The shells now generally coarse—average strength of the marl, 37,100 of calcareous earth. In the winter after, ploughed three inches deep as nearly as could be, which made the whole new surface yellow, by bringing barren subsoil to the top.

Results continued.—1821.—In corn. The whole a remarkable growth for such a soil. The oldest (and heaviest) marled piece better than the other, but not enough so to show the dividing line. The average product of the whole supposed to have been fully twenty-five bushels to the acre.

1822.—In wheat—and red clover sowed on all the old marling, and one or two acres adjoining. A severe drought in June killed the greater part of the clover, but left it much the thickest on the oldest marled piece, so as again to show the dividing line, and to yield in 1823, two middling crops to the scythe—the first that I had known obtained from any acid soil, without high improvement from putrescent manures.

1823.—At rest—nothing taken off, except the clover on B C *m l*.

1824.—In corn—product seemed as before, and its rate may be inferred from the actual measurement on other parts, which will be stated in the next experiment, the whole being now cleared, and brought under like cultivation.

Experiment 2.

The part *e f n o*, cleared and cultivated in corn at the same times as the preceding—but treated differently in some other respects. This had been deprived of nearly all its wood, and the brush burnt at the time of cutting down—and its first crop of corn (1818) being very inferior, was not followed by wheat in 1819. This gave two years of rest before the crop of 1821—and five years rest out of six, since the piece had been cut down. As before stated, the soil rather lighter on the side next to *o e* than *n f*.

March, 1821.—A measured acre near the middle, covered with six hundred bushels of calcareous sand, (20-100,) the upper layer of another body of fossil shells.

Results.—1821.—In corn. October—the four adjoining quarter acres, marked 1, 2, 3, 4, extending nearly across the piece, two of them within, and two without the marled part, measured as follows:

Not marled, No. 1, 6⅛ } average to the acre 22½ bushels of grain.
do. No. 4, 6⅜ }
Marled, No. 2, 8¾ } average 33¼ bushels.
do. No. 3, 8½ }

The remainder of this piece was marled before sowing wheat in 1821.

1823.—At rest.

1824.—In corn—distance 5½ by 3¼ feet, making 2436 stalks to the acre. October 11th, measured two quarter acres very nearly coinciding with Nos. 2 and 3 in the last measurement. They now made

No. 2, 7 bushels 5¼ pecks, or per acre, 31.1 } Average
No. 3, 8 bushels, ... 32.0 } 31.2½
Average in 1821, ... 33.1

Experiment 3.

The part *e f g h* was cut down in January, 1821, and the land planted in corn the same year. The coultering and after-tillage very badly executed, on account of the number of whortleberry and other roots. As much as was convenient was marled at six hundred bushels, (37-100) and the dressing limited by a straight line. Distance of corn 5½ by 3¼ feet—2262 stalks to the acre.

Results.—1821.—October—on each side of the dividing line, a piece of 28 by 21 corn hills measured as follows:

No. 1. 588 stalks, not marled, 2 bushels, equal to..... 7¾ the acre.
No. 2. 588 stalks, marled, ... 4¼, 16⅝ the acre.

1822.—In wheat, the remainder having been previously marled.

1823.—At rest. During the following winter it was covered with a second dressing of marl at 250 bushels, (45-100,) making 850 bushels to the acre altogether.

1824.—In corn. Two quarter acres, chosen as nearly as possible on the same spaces that were measured in 1821, produced as follows:

No. 1, 8 bushels, 2 pecks, or to the acre,..... 34
The same in 1821, before marling,..... 7.3¾

No. 1, 7 bushels, 2½ pecks, or to the acre,..... 30.2
The same in 1821, after marling,..... 16.1½

1825.—The whole twenty-six acres, including the subjects of all these experiments and observations, were in wheat. The first marled piece in Exp. 1, was decidedly the best—and a gradual decline was to be seen to the latest. I have never measured the product of wheat from any experiment, on account of the great trouble and difficulty that would be encountered. Even if the wheat from small measured spaces could be reaped and secured separately, during the heavy labors of harvest, it would be scarcely possible afterwards to carry the different particles through all the operations necessary to show exactly the clean grain derived from each. But without any separate measurement, all my observations convince me, that the increase of wheat from marling, is at least equal to that of corn, during the first few years, and is certainly greater afterwards, in comparison to its product before using marl.

It was from the heaviest marled part of Exp. 1, that soil was analysed to find how much calcareous earth remained in 1826, (page 26.) Before that time the marl and soil had been well mixed by ploughing to the depth of five inches. One of the specimens of the soil then examined, consisted of the following parts—the surface, and consequently the undecomposed weeds upon it, being excluded.

1000 grains of soil yielded

769	grains of silicious sand, moderately fine.
15	finer sand.
784	
8	calcareous earth, from the manure applied,
180	finely divided clay, vegetable matter, &c.
28	lost in the process.
1000	

This part, it has been already stated, was originally lighter than the general texture of the land.

Experiment 4.

The four acres marked A D *n o* were cleared in the winter of 1823—4. The lines *p q* and *r s* divide the piece nearly into quarters. The end nearest A *p o* is lighter, and best for corn, and was still better for the first crop, owing to nearly that half having been accidentally burnt over. After twice coultering, marl and putrescent manures were applied as follows; and the products measured, October 11th, the same year.

	Bush.	Pecks.
s q not marled nor manured—produced on a quarter acre, (No. 4.) of soft and badly filled corn, 3 bushels, or per acre	12	
q r and *r p*, marled at 800 bushels, (45-100) by three measurement of different pieces—		
¼ acre (No. 1.) five bushels, very nearly, or.....	19	3¼
⅛ acre (No. 2.) 2.3¾ } average 24.1½.....	22	2
⅛ acre (No. 3.) 3.1¼ }	27	
s t manured at 900 to 1100 bushels to the acre, of which,		
¼ acre (No. 5.) with rotted corn stalks, from a winter cowpen gave 5.2½, ...	22	2
⅛ acre (No. 6.) with stable manure, 4.1¼,.....	35	2
⅛ acre (No. 7.) covered with the same heavy dressings of stable manure, and of marl also, gave 4-2,.....	36	

p w, marled at 450 bushels, brought not so good a crop as the adjoining *r p* at 800.

The distance was 5½ by 3¼ feet. Two of the quarter acres were measured by a surveyor's chain, (as were four other of the experiments of 1824, and found to vary so little from the distance counted by corn-rows that the difference was not worth notice.

1825.—In wheat; the different marked pieces seemed to yield in comparison to each other, proportions not perceptibly different from those of the preceding crop—but the best not equal to any of the land marled before 1822, as stated in the 1st, 2d, and 3d experiments.

1827.—Wheat on a very rough and imperfect summer fallow. This was too exhausting a course, (being three grain crops in the four shift rotation,) but was considered necessary to check the growth of bushes that sprung from the roots still living, The crop was small, as might have been expected from its preparation.

1828.—Corn—in rows five feet apart, and about three feet of distance along the rows, the seed being dropped by the step. Owing to unfavorable wheather, and to insects and other vermin, not half of the first planting of this field lived—and so much replanting of coursed caused its product to be much less matured than usual, on the weaker land. All the part not marled, (and more particularly that manured,) was so covered by sorrel, as to require ten times as much labor in weeding as the marled parts, which as in every other case, bore no sorrel. October 15th, gathered and measured the corn from the following spaces, which were laid off (by the chain) as nearly as could be, on the same land as in 1824.

The products so obtained, together with those of the previous and subsequent courses of tillage, will be presented below, in a tabular form, for the purpose of being more easily compared.

On the wheat succeeding this crop, clover seed was sowed, but very thinly and irregularly. On the parts not marled, only a few yards width received seed, which the next year showed the expected result of scarcely any living clover. On the marled portions, the growth of clover was of middling quality, was not mowed nor grazed, but seed gathered by hand both in 1830 and 1831.

1832.—Again in corn. It was soon evident that much injury was caused to the marled half, *q p o n*, by the two great quantity applied. A considerable portion of the stalks, during their growth, showed strongly the marks of disease from that cause, and some were rendered entirely barren. A few stalks only had appeared hurt by the quantity of marl in 1828. On the lightly marled piece, *w p*, and where the heaviest marling was accompanied by stable manure, there has appeared no sign of injury. The products were as follows:

Mark.	DESCRIPTION.	Products of Grain per acre. 1st course. 1824. Oct. 11.	2d course. 1828. Oct. 15.	3d course. 1832. Oct. 26.
		Bush. Peck	Bush. Peck	Bush. Peck
s q	Not marled or manured,	12	21 1	17 3½
q r 1	Marled at 800 bushels,	19 3½	28 1½	28
r p 2	The same,	22 2	31 0¼	27 3
r p 3	The same,	27		
s t 5	Cow-pen manure, 900 to 1100 bushels,	22 2	25 2	bet. than *sq*
s t 6	Stable manure, 900 to 1100 bushels,	35 2	29	23 1
w t 7	Marl and stable manure, both as above	36	33 2	37 3½
w p	Marled at 450 bushels,	Less than *r p* (800)	Equal to *r p*.	31 3

An accidental omission prevented the measurement of *s t* 5, in 1832.

This experiment has been made with much trouble, and every care bestowed to ensure accuracy. Still several causes have operated to affect the correctness of the results, and to prevent the comparative products showing the true rate of improvement either from marl, or the putrescent manure. These causes will be briefly stated.

1st. The quantity of marl (800 bushels,) on *q r* and *r p* is nearly double the amount that ought to have been used: and this error has not only increased the expense uselessly, but has served to prevent the increase of product that would otherwise have taken place. This loss is proved by the gradual increase, and at last the greater product of *w p* marled at only 450 bushels.

2d. The comparative superiority of all the marled ground to *s q* not marled, is lessened by this circumstance: most of the large logs as well as all the small branches, were burnt upon the land, when it was cleared in 1824, before the experiment was commenced: and the ashes have durably improved a spot where each of these large fires were made on *s q*, but have done no good, and perhaps have been injurious, to the marled pieces that were made sufficiently calcareous without the addition of ashes. At least, the good effect of ashes is very evident on *s q*, and has helped somewhat to increase all its measured products, and no such benefit has been visable on the marled parts.

3d. The quantity of putrescent manure applied to *s t*, (900 to 1100 bushels,) was much too great, both for experiment and profit: and the quantity, together with the imperfectly rotted state of the stable manure, has given more durability to the effect, than is to be expected from a more judicious and economical rate of manuring.

For these several reasons, it is evident that far more satisfactory results than even these, would have been obtained if only half as much of either marl or manure had been applied.

There are other circumstances to be considered, which if not attended to, will cause the comparative increase or decrease of product in this experiment to be misunderstood. It is well known that poor land put under tillage immediately after being cleared, as this was in 1824, will not yield near as much as on the next succeeding course of crops. This increase, which depends merely on the effects of time, operates independently of all other means for improvement that the land may possess; and its rate in this experiment may be fairly estimated by the increase on the piece *s q* from 1824 to 1828. The increase here, where time only acted, was from 12 to 21¼ bushels: but as the corn gathered here was always much the most imperfectly ripened, and would therefore lose the most by shrinking, I will suppose eight bushels to be the rate of increase from time, and that so much of the product of all the pieces should be attributed to that cause. Then to estimate alone the increased or diminished effects of marl, or manure on the other pieces, eight bushels should be deducted from all the different applications, the estimate will stand thus.

	1824.	1828.	Deduct for time.	Increase.	Decrease.	
	B. P.	B. P.	B.	B. P.	P. P.	
q r 1	19 3½	28 1½	8	0 2	——	From 800 bushels of marl.
r p 2	22 2	31	8	——	1 1½	From 800 bushels of marl.
r p 3	27					
s t 5	22 2	25	8	——	5 2	From 1000 bushels cow-pen manure.
s t 6	35 2	29	8	——	14 2	From 1000 bushels of stable manure.

Even the piece covered with both marl and stable manure, *(w t,)* shows according to this estimate, a diminished effect equal to 10½ bushels which was owing to the marl not being able to combine with, and fix so great a quantity of manure, in addition to the vegetable matter left by its natural growth of wood. The piece *w p* marled at 450 bushels alone, has shown a steady increase of product at each return of tillage, and thereby has given evidence of its being the only improvement made in such manner as both judgment and economy would have directed.

From the Genesee Farmer.

DISEASES AND ENEMIES OF FRUIT TREES.

The fact that many valuable fruit trees, and sometimes even whole orchards, are destroyed by diseases and insects, shows the importance of attention to the subject. A concise account therefore, of the various diseases and enemies to which fruit trees are liable, and the most efficient remedies which have yet been made known, may prove acceptable to young or inexperienced cultivators of fruit; especially as this information is now scattered through a great number of horticultural works, which perhaps are accessable to a few only. We therefore propose to give brief descriptions of the most formidable and common of these evils, and their respective remedies,

APPLE.—The hardiness and vigor of this tree is such, and its enemies comparitively so few in the western part of New-York, that little difficulty has been yet experienced in its successful cultivation. It has occasionally however, its evils to contend with. Among the most common are 1. Canker. 2. The Borer. 3. The Caterpiller. 4. The American Blight.

1. *Canker* is a disease ascribed to various causes. Some attribute it to the poorness or wetness of the soil; others to the trees being exposed in a bleak situation to frosts and cold winds; but the most probable cause is external injuries sustained by applying ladders in gathering the fruit, leaving dead branches remaining on the tree, and by injudicious pruning. Where trees thus receive large wounds, decay frequently commences in those parts, and gradually extends until the tree dies. Wherever therefore wounds have been made, whether by pruning or otherwise, they should be protected from the air and moisture by a thick coat of paint or a mixture of tar and brick dust.* Where canker has actually commenced, either in apple or other fruit trees, the only remedy is to cut away, (with a drawing knife or other suitable instrument,) all the affected parts, protecting the freshly cut surface with a coating of paint, wax, or other similar substance. Canker is sometime caused by pruning in the spring while the sap is in rapid circulation, as it then oozes out upon the wound, causing it to turn black and producing decay in the branch.

2. *The Borer* is an insect which perforates the wood at or a little below the surface of the earth. They may be taken out by means of a slender

* There is nothing equal to a cataplasm of fresh cow-dung. Plaster it upon the wound while fresh, and cover it with a coarse cloth or swingling tow, and tie, loosely. It not only protects from the air and moisture, but possesses remarkable healing qualities, whether applied to the wounds of animals or vegetables.—*Cultivator.*

barbed wire, which can be introduced into the hole for this purpose. Where the hole is too crooked for this, soap suds, or strong decoction of tobacco, injected into it, will destroy them. Whatever mode is adopted to destroy them, the operation should be repeated several times during the summer, in order completely to extirpate them.

3. *The Caterpillar* has heretofore been the most formidable enemy to the apple tree in western New-York. It first makes its appearance in the spring, just as the leaf buds begin to open, when it is not the tenth of an inch long, and no larger than a cambric needle. It is then very easily destroyed by means of a brush dipped in some caustic or poisonous solution, as of lime, soap, or tobacco. It is destroyed with less ease as it increases in size. When fully grown it is two inches long and a quarter of an inch in diameter. It then spins a cocoon and passes to the pupa state, and in the latter part of the summer comes out a brown miller. It then deposites its eggs near the ends of the smaller branches, in the form of a band or broad ring round them, each ring of eggs containing about five hundred. These may be cut off and destroyed at any time during the autumn or winter. Every ring of eggs thus destroyed, will prevent a nest of caterpillars the next season.

4. *The American Blight*, (so called,) is caused by the *Aphis lanata*, a small insect, so thickly covered with fine white hair as to appear enveloped in fine cotton; hence it is sometimes, and more appropriately, termed *white blight*. In England, apple trees have been greatly injured, and sometimes destroyed by it. The insect is described as furnished with a fine bristle-like beak, with which it pierces the bark and abstracts the nourishment from the cambium or newly formed sap wood. The sap wood being thus wounded rises up in excrescences over the whole surface—the limb grows sickly, the leaves turn yellow, and the branch perishes. Branch after branch is assailed in turn, until they all become leafless and the tree dies. The insect spreads from tree to tree, by being carried on the wind by means of its long cottony tufs of hair. It is easily destroyed on young trees, and those older which have been recently attacked, by a coating over with a painter's brush, the affected parts, with a mixture consisting of equal parts by weight, of rosin and fish oil, melted together and applied warm. This prevents the escape of the insects and stifles them. The operation should be performed early in the season, or as soon as the hoariness accasioned by the insects, appears on the branches. As this insect has as yet been introduced into this country in but small numbers, it becomes important to watch it closely, and destroy it now at the outset before it becomes extensively spread. The application of soft soap has been recommended for its destruction when it first appears on trees from infected nurseries.

The canker worms is perhaps the most destructive insect to the apple trees which has infested American orchards, but it appears to have been hitherto confined to certain parts of the country only, particularly of New-England. It ascends the trunks of the tree in the spring and in a short time destroys all the leaves of the tree, and thus eventually causes its death. The most common method is tarring daily the body of the tree, during the season of its activity, and thus preventing its passing up the tree.

QUINCE.—The most formidable, and perhaps nearly the only enemy to the quince, is *the Borer*, which attacks the tree in the same manner as that of the apple. The same remedy is to be applied. It is said that the borer may be excluded by enclosing the lower part of the trunk in tan or unleached ashes during the spring months. Grafting the quince above ground on pear stocks, will also in a great measure save it from the attacks of the borer, as the pear is rarely touched by it.

PEAR.—The pear, in common with the apple and other trees, is liable to occasional attacks from the catterpillar, and sometimes from a few other insects, but its great and peculiar malady is the *Fire Blight*. This first affects trees generally during the early part of summer, sometimes later, causing the branches and leaves suddenly to turn black and die. It is attributed to a very small insect *(Scolytus piri)* which eats a small circular ring under the bark, round the branch, thus cutting off the upward flow of the sap. Where the insect has been discovered, it has been some inches below the affected part. The only remedy is to cut off the diseased branch immediately, at some distance below, and commit it to the fire. This course when faithfully and unremittingly pursued has been found entirely effectual in preventing the ravages of this formidable enemy of the pear. Some attribute fire blight to other causes than the work of an insect, but all agree that the only effectual cure is to cut off and burn the limb.

PLUM.—The principal enemy to the plum, as well as to all smooth stone fruit, is the *Curculio*. This is a small beetle or bug, about a quarter of an inch long, (its head and thorax resembling at first glance, a long beax, serving at once to distinguish it,) which punctures and deposits its egg in the young fruit. A worm proceeds from this, which feeds upon the fruit, and causes it prematurely to fall to the ground; when the worm passes immediately into the earth, and continues (as is supposed) in the pupa state during winter, and the next season comes out in the perfect state to propagate its species by again puncturing the fruit. Now if, when the fruit falls, it be destroyed immediately, before the worm escapes, the fruit of the succeeding year will be saved. This may be easily affected by suffering a number of swine to feed among the trees to devour all that fall. But where swine cannot be admitted, the best way is to jar down the insects during the time of laying their eggs, by a stroke of the hand or of a mallet, when they may be caught in white sheets of cloth spread under the tree to receive them, and destroyed. Where this operation has been performed two or three times a day, it has soon cleared the tree of them.

The plum tree is liable to a disease sometimes called canker, which is an excresence upon the branches, at first green, and afterwards becoming black; the diseased branch soon dies and the whole tree gradually perishes. It is prevented by cutting off all the affected branches as soon as the disease appears, and burning them: By seasonable care, it may thus be prevented from doing further mischief with little trouble.

A large number of plum trees in this state suffered greatly from some unknown cause, in the early part of the autumn of 1833. The leaves fell prematurely, in consequence of which the fruit was not perfected, and the trees themselves received a check from which many of them did not recover. A large number have since died; many however, perhaps the greater part, are now recovering, and some have assumed their former thriftiness.

PEACH.—The peach is particularly subject to the attacks of an insect called the *Peach worm*, and to a disease known by the name of the *Yellows*.

1. The *Peach worm* is produced from the eggs of a lepidopterous fly *(Ægeria persicæ)* which deposites its eggs during summer in the bark of the tree near the roots. The worms which these produce, penetrate the bark to the external surface of the wood, and commence the work of destruction, sometimes devouring the inner bark entirely round the tree, and speedily causing its death. It is rare however, except in very small trees, that death is produced, as the worm seldom eats completely round; in which case the injury only retards its growth. Its presence is readily detected by the gum filled with excrementitious matter, which oozes from the tree, near the surface of the ground. The best remedy is to remove the earth from round the foot of the tree, together with a small portion of the injured bark, when the worm will be exposed and may be readily destroyed. All the holes should be traced to their end, in order to see that the tree is cleared of them, cutting the bark as little as possible, so as not to injure the tree unnecessarily.

2. *The Yellows*. This disease is by far the most formidable evil which the peach has to encounter. It is entirely peculiar to the peach and nectarine. Its cause is unknown. It is first indicated by the fruit ripening three or four weeks earlier than usual, generally with red specks and blotches upon it. This commonly takes place on a part of the tree only. The following season, a number of very small wiry shoots grow from the larger branches, the leaves become yellow, the whole tree assumes a sickly appearance, and eventually perishes. What renders this disease the more to be dreaded is its contagious nature. If not checked, it commonly spreads through the orchard. The infection is supposed to be communicated at the time of flowering by the pollen or farina which is carried from tree to tree; the fruit thus receives the malady, which is quickly carried by the circulation of the sap through the branches and trunk. The disease is also always communicated where a bud from an infected tree is inserted on a healthy one; and even by prunning a healthy tree with a knife which has been previously used on a diseased one. After it has once attacked a tree, there is no remedy; it must inevitably perish.—Wherever therefore a tree is seen ripening its fruit prematurely, especially if that fruit be marked with red blotches unusual in it, it is to be looked upon as a lost tree—nothing can save it; and nothing can save adjacent ones from becoming infected but by destroying it before it blooms again. No peach tree should be planted on the same spot until several years of intermediate cultivation; perhaps it will be best in most cases to plant fruit trees of some other species, which are not attacked by this disease, in places where such peach trees have stood.

NECTARINE.—This fruit tree is subject to the same diseases as the peach, of which indeed it is considered as but a variety; and the same remedies apply to both. Its fruit is also subject to the attacks of the curculio, for an account of which, see the article on the *plum*.

APRICOT.—The principal enemies of this fruit, are 1. *The worm* or *Ægeria*, which has been described in the account of the peach; and 2. *The curculio*, described in the account of the plum.

CHERRY.—In western New-York, the cherry has but few diseases or enemies, and those of little importance. Some varieties are attacked by an insect which causes large excrescences on the branches. Whenever these appear, they should be immediately cut off and committed to the fire. Perhaps the greatest enemy is the *Cedar bird.** The only known way of repelling them is to thin their ranks by means of powder and shot, when they become suspicious and fearful, and less voracious in their depredations. Small trees of choice varieties may be protected from the birds by covering them with a large coarse net, made of bass matting or other material.

* This is a small bird about the size of the blue bird, of a light brown colour, readily distinguished by its crest; and is by its voracity very destructive to ripe cherries.

Household Affairs.

"*To make Currant Jelly.*—Take the juice of red currants 1 lb. sugar 6 oz. Boil down. Or,

Take the juice of red currants and white sugar equal quantities, stir the mixture gently and smoothly for three hours, put it into glasses, and in three days it will concrete into a firm jelly."

For making Currant Wine, numerous methods have beeen published. The juice of the currant consists, principally of water, saccharine matter and vegetable mucilage. Its convertion into wine is effected by what is termed the vinous and spirituous fermentations, which transform the saccharine matter into alcohol. If the must, or expressed juice, is deficient in saccharine matter, the fermented liquor will be weak and vapid, and run into the acetous, or vinegar, and sometimes into the putrid fermentation. Hence the practice of adding sugar to the must, to give it body, &c. The more violent the spirituous fermentation, the more the strength of the liquor will be dissipated; and therefore the process should progress as slowly as possible, and under a temperature not exceeding 70°. The vinous and spirituous fermentations not only convert the sugar into spirits, but they separate the mucilage, or yeast, from the liquor, in a great measure, which latter then becomes clear and transparent. If the fermentation, in wine or cider, is checked, by natural or artificial means, before the saccharine matter is converted into spirits, the liquor remains proportionably sweet; but when the conversion is complete, the product is what is termed dry liquor. If the mucilage is left in the cask after it has performed its office, it is apt to commingle again with the liquor, render it turbid, and induce, under a warm temperature, the acetous fermentation. Hence the practice, in some cases, of conducting the vinous fermentation in open vessels, and of *then* separating it from the scum and lees; and in other cases, of racking it off, before the action of summer heats upon it. We shall give directions for making wine in both these modes. The first is from the American Philosophical Transactions, and the latter from our friend Judge Patterson, of Columbia, who successfully adopted it for many years. For ourselves we prefer the latter mode, though we think the brandy superfluous, where 30 lbs sugar are employed in the fabrication of a barrel.

First mode.—"Gather the currants when they are fully ripe, and dry, break them in a tub or vat, then press and measure the juice, to each gallon of which add too gallons of water, and to each gallon of the mixture put 2½ lbs. sugar; agitate the whole till the sugar is dissolved, when it may be barrelled. The *juice* should not be left to stand during the night, as the fermentation ought not to take place till all the ingredients are compounded. Lay the bung lightly on the hole to prevent flies, &c. creeping in, and in three weeks bung up, leaving only the vent hole till it has fully done working, which will be about the latter end of October. Rack into a clean cask the spring following. For a barrel of 28 gallons will be required, 8 gallons currant juice, 16 gallons water, 4 gallons sugar, or 60 lbs.

Second mode, in which the vinous fermentation is managed in an open vessel. Pick and press the currants as before, and add two gallons of water to one of juice, and 30 lbs. sugar to a barrel of 32 gallons. Stir well, and cover the must, in an open vessel, with a linen cloth, place it where the temperature is from 60 to 70°, and next day skim off the impurities which rise to the surface and stir again the liquor. Repeat this operation as long as the scum rises. Then barrel, rejecting the lees, adding 2½ gallons good brandy, and bung close. No racking is required.

In the last mode the vinous fermentation is completed before barrelling. The spirituous soon follows, if the temperature remains as high as 60°, and abates in 6 to 12 days.

If the wine becomes foul or ropy, take half an ounce of chalk in powder, half an ounce burnt alum, the white of an egg and a pint of spring water, beat the whole in a mortar, pour it into the cask, and roll it ten minutes; and as soon as the wine becomes fine rack it off.

Sea-weed Manure.—Fleets of boats, to the number of sixty or seventy, are daily arriving at Galway with sea-weed for manure, from Cunnamara, Arran and the county Clare, which is purchased with avidity, and conveyed on carts all over the country, in various directions, even to the distance of forty or fifty miles into the interior.—*Galway paper.*

THE CULTIVATOR—OCT. 1835.

TO IMPROVE THE SOIL AND THE MIND.

CHAPTAL'S CHEMISTRY.

We have been kindly presented, by the publishers, with a copy of CHAPTAL'S "*Chemistry applied to Agriculture*," a 12mo. volume of 366 pages, translated from the French, and recently published by Hilliard, Gray & Co. Boston.

The American public are under great obligations to the fair translator, and to the publishers, for giving us this valuable work in an English dress. Count Chaptal, the author, was one of the most eminent chemists of the day, and one of the best and most extensive practical farmers in France. While he taught the great principles of science, or laws which regulate matter, he illustrated their use and application to rural labor, not only on the farm but in the more humble business of the dwelling. "In order," says he, "to make a useful application of science to agriculture, it must be profoundly studied, not only in the closet, but abroad in the fields." He was a man of *practical* science, and of *scientific* practice. His work possesses an advantage over Davy's, because it is more recent, and embraces the modern discoveries in chemistry; and particularly because it is more practical, and better adapted to the understanding and business of the farmer—the principles of science being illustrated and established by the writer himself, in an extensive agricultural practice. The volume is calculated to become in the hands of our intelligent and enterprising yeomanry, a valuable means of advancing the condition of our husbandry, and of our husbandmen, and of elevating their character. While, in the language of the translator, it "sheds all the light of modern science upon the humblest details of rural labor; and while it increases the productive skill of those who are engaged in practical husbandry, it at the same time 'advances them in the dignity of thinking beings.'"

In his introduction, the author dwells upon the enervating influence of sedentary and city life; he ascribes to agriculture, the means of counteracting this influence, and of preserving to a country its health, strength and good morals; considers it the purest source of public prosperity, and ranks the agriculturist first in usefulness among men. He speaks of the abject condition of the agriculturist in past ages:—"Without emulation, without knowledge, and nearly without interest, the thought of improvement scarcely presented itself to his mind;" and he contrasts the former with his more recent condition, when "the farmer recognized his strength, and felt himself rising into the true importance and dignity of his state; when intelligence was extended to the business of the fields; the means of ameliorating the soil, and improving its productions, were established and increased; and private interest was united to the public good. At that period, agriculture took a new impulse; and since then its progress has been rapid. The nature of soils has been better known; the cultivation of artificial meadows has been extended; and a rotation of crops has been established upon principles recognized in all those countries where agriculture has made the most progress. The number of domestic animals has also progressively increased, and with them, the manures and the labors which form the basis of agricultural prosperity."

We leave the reader to determine, whether he belongs to the ignorant, abject class of past ages, or to the more enterprising one of recent times. If he is young, and his habits are not fixed, we conjure him, as he regards his future prosperity and happiness, to strive, by all honest means, to gain admittance into the latter class. Let him bear in mind, that excellence and distinction, in any honest calling, is only to be achieved by industry and perseverance; and that the reward is generally proportioned to the labor which it costs. Though all do not "earn their bread by the sweat of their brow," those who do so have the best relish for, and participate most largely in, the substantial enjoyments of life.

Upon the pleasures and advantages of science to the agriculturist, Count Chaptal very justly and eloquently remarks:

"It remains to us, at this day, to improve agriculture by physical science. All the phenomena which it presents, are the consequences necessarily resulting from those eternal laws by which matter is governed; and all the operations which the agriculturist performs, serve only to develop or modify these laws. It is, then, to the acquisition of a knowledge of these laws, in order to calculate their effects, and modify their action, that we ought to direct all our researches.

"Can any study present to the agriculturist more attractions, than that which has for its object the explanation of those effects, which every day captivate his senses and astonish his reason? Without doubt, observation has made him acquainted with the uniform march of nature. In all her operations, he can judge of the modifications effected in her productions by the state of the atmosphere, the variation of climate and the nature of the soil. Even this practical knowledge enables him to direct many of the labors of the field. But, if he be permitted to ascend from effects to their causes; if we can determine, and demonstrate to him, the action which is exercised upon vegetation by the air, water, heat and light, the sun, various kinds of manure, &c. &c. and assign to each of these agents the parts which it performs in these grand phenomena, how much will he be moved! Even while an ignorant witness of these wonders, he is lost in admiration of them; but, more enlightened, he will feel this sentiment constantly increasing, as he rises to the causes which produce them."

Count Chaptal presses upon the consideration of his government, the justice and policy of giving legislative aid to agriculture, by providing national schools of instruction, and by exciting emulation among cultivators by liberal premiums. His remarks upon this head are so just and forcible, that we shall transfer a portion of them to the columns of the Cultivator.

"But it is not sufficient to enlighten the agriculturist," says he, "in order to facilitate the progress of the art; the government has an important duty to perform towards it. It is only when intelligence and encouragement are united, that the former can be assured of lasting prosperity.

"Agriculture is the most fruitful source of the riches of a country, and of the welfare of its inhabitants; and it is only as the state of agriculture is more or less flourishing, that we can judge unerringly of the happiness of a nation, or of the wisdom of its government. The prosperity which a country derives from the industry and skill of its artizans, may be but a passing gleam; that alone is durable, which has its rise in a good cultivation of the soil. These facts ought to be constantly present to the mind of the government, and to influence all its measures."

"By encouraging improvements in agriculture, and favoring the increase of production, government enriches the agriculturist less than its own revenues; since by these means the quantity of taxable matter is increased, and the right of government recognized under all its forms, whether the article produced be employed in its crude state for domestic use, or whether it furnish the workshops of the artizan with the materials of his handicraft."

Again—"It would be necessary that at least two experimental schools of agricultural instruction should be established in France, one in the north and the other in the south, in order to embrace all kinds and varieties of culture adapted to the climate.

"The extent of land devoted to each establishment should be about 200 *hectares* [nearly 500 acres] and the buildings should be able to lodge at least one hundred pupils.

"The nature of the soil must be sufficiently varied to admit of all the different kinds of culture adapted to the climate.

"There would be required in said establishment a director, entrusted with the care and management of it, and two professors, one of chemistry applied to agriculture, the other of veterinary medicine.

"The purchase of lands and the cost of the establishment might be estimated from a million to twelve hundred thousand francs, [130,000 to 200,000 dollars for both] but the money paid for board, and the products of cultivation, would at least cover all the annual expenses.

"It would be useful to connect with each establishment a workshop, for the manufacture of all implements of husbandry, perfected or newly invented, or employed in rural operations. The profits of the workshop would form a considerable revenue for the establishment.

"The young people admitted into the establishment as boarders, should be employed in all agricultural labors; they should be instructed in the responsible management of an estate.

"There should be annually a formal distribution of prizes to those pupils who have distinguished themselves by good conduct, and to those who have made the greatest progress.

"A royal ordinance should establish these principles, and the minister of the interior should make the rules necessary for securing their execution in every particular.

"I have no doubt that these establishments would produce, in a few years, the best effects upon French agriculture. The pupils who left these schools would diffuse every where instruction and good methods of cultivation, and the first of arts would no longer depend for preservation on a mere routine, which perpetuates error and prejudice.

"In establishing these two schools, the government will have fulfilled only one part of its duty to agriculture; it owes it roads and canals to facilitate the transportation of commodities; it owes it a wise regulation of taxes, so that they may never represent a single part only of the benefit derived from agricultural operations; it owes it a kind and paternal administration; it owes it assistance when accidental casualties or diseases have ravaged crops and destroyed cattle.

"And even in this, the government has not yet fulfiled all its duties to agriclture, to their full extent; it should excite emulaion which, in the arts, works miracles, and should reward agriculturists who make important discoveries; and those who improve and extend useful methods of cultivation.

"These pecuniary encouragements should not be distributed at random, nor badly bestowed, for they would then extinguish emulation instead of rousing it.

"A well selected jury should designate, every year, to the authorities, those cultivators of the department who have deserved best of agriculture, and the distribution of prizes should be made in a public and solemn sitting.

"The object of the examination of the jury should be to determine who are those agriculturists who have introduced upon their estates animals more valuable and more useful than those of the country, and those who have improved the native breeds;

"Those who have established the system of cropping most favorable to the soil.

"Those who have discovered modes of manuring and improving the soil, before unknown or not used;

"Those who have planted the largest number of trees;

"Those who have opened to culture lands hitherto barren;

"Those who have introduced the cultivation of plants, the produce of which is more profitable than that of those usually raised;

"Those who have invented or improved agricultural implements;

"In a word, all those who should have rendered services in any department of agriculture, would be entitled to these rewards.

"I believe that prizes to the amount of ten or twelve thousand francs [1,800 to 2,000 dollars,] annually distributed in each of the departments, would be sufficient to excite a happy emulation among agriculturists.

"The government should also reserve to itself some places in the two principal schools of agriculture, and there place the children of the most distinguished cultivators, to be maintained at its expense."

Then follows some excellent suggestions in regard to public roads, as channels for the transportation of agricultural produce to market; and he recommends that there be attached to each department, a superintendent of bridges and highways, whose duties should be confined to whatever relates to the district roads.

There are chapters of this work particularly adapted to household affairs, for instance, *on the preservation of animal and vegetable substances; on milk and its products; on the means of preparing wholesome drinks; and on washing and bleaching.* There is also a chapter, containing judicious and useful suggestions, on the construction of *farm buildings, both for men and animals, and the means of making them healthy*—also, one *on the cultivation of woad, and the extraction of indigo from it;* and another *on the cultivation of the beet root, and the extraction of sugar from it.* M. Chaptal, it is believed, went extensively into the culture of the two last named products; and he has furnished minute details, particularly in regard to the latter, from the sowing of the seed to the refining the sugar and the profitable disposition of the refuse products. No person should enter upon the manufacture of sugar from the beet without the aid of this valuable manual. We will abstract a few facts from this treatise, as supplementary to the article we published in our August number on this subject.

On choice of soil.—Dry, calcareous and strong clays are bad, as are also grass lays. Beets do best in a loose, fertile soil, having a bed of vegetable mould of at least 12 or 15 inches in depth. Good soil will give 100,000 lbs. per hectare [equal to two acres, one rood, thirty-five perches English,] a poor soil from 10 to 20,000 lbs.—average say 40,000. Roots weighing from one to two pounds yield nearly double the sugar to those weighing from 10 to 20 lbs.

Preparation of soil.—Prepare it as for wheat, and bury the manure with the last ploughing, if this is applied, but it is unnecessary on rich ground.

Harvesting.—The time of gathering is indicated by the larger leaves turning yellow. If left longer in the ground a portion of the sugar is converted into salt-petre—if gathered sooner, they wither, wrinkle and grow soft. A good hint this for those who cultivate the root for culinary uses. Gardeners should treasure it up.

Preserving the roots.—They should be kept at a temperature near the freezing point, as they freeze one degree below, and grow a few degrees above. Frost softens and destroys their saccharine principle; heat develops the stocks at the necks of the roots, and decomposes the juices which supply their growth. They should be thoroughly dried before they are housed. These too are valuable hints to the gardener and housewife. For family uses they are best kept in a box or cask, mixed with dry earth, and placed in a cool cellar.

Preparation of the roots.—They must be freed from the radicles, necks, diseased parts, and all dirt. Eight women can prepare 10,000 lbs. in a day.

Rasping—The rasps are sheet iron cylinders, 15 inches in length, and 24 in diameter, having their surfaces furnished with 90 iron plates, armed with saw teeth, and fixed with screws—driven by horse or steam power. The beets are pressed against the rasp by means of a piece of wood held in the hand. With two rasps, (says M. Chaptal,) I have reduced 5000 pounds of beets to a pulp in two hours. The grater cider mill would do this admirably.

The processes of manufacturing are too long to copy, and too important to abridge; they should be studied in detail.

Product in Sugar.—The product of 10,000 lbs. of trimmed beets is stated,

In sugar of the first quality, (double refined loaf,)....	187 lbs.
In sugar of the second quality,.....	60 lbs.
Total, ...	244

In his *general considerations*, M. Chaptal remarks, "From 12 years experience I have learned, in the first place, that the sugar extracted from beets differs from that of the sugar cane, neither in colour, taste, or crystalization; and in the second place, that the manufacture of this kind of sugar can compete advantageously

with that of the sugar cane, when the price of the last is in commerce one franc and twenty centimes per demi-killogramme:" (=18½ cents per pound, reference being had to refined sugar.)

We have been tedious, we are afraid, in our notice of and extracts from this work. Yet we shall have occasion hereafter frequently to refer to the principles of agricultural science which it illustrates. Its general circulation cannot but have the happiest effect in instructing our farmers, should it fail in the more desirable object of enlightening our statesmen and legislators.

PRESERVING MEATS.

The intrinsic value of salted meats, whether for family use or for market, depends materially upon the manner in which they are preserved. An excess of salt renders lean meats, as beef and hams, hard, tough and unpalatable, besides destroying much of their nutritious properties; while too little salt, or an equivalent of some other antisceptic, will not preserve them in a healthful state. It is as easy and as cheap to preserve meats well, as it is to do it badly, if we are furnished with good rules, and duly observe them. There are, no doubt, many rules adapted to this end. We have tried many, and have finally, for some years, adopted, with perfect satisfaction, for family use, the pickle which we give below, for the curing of beef and hams. It is said to be equally good for pork, though we have not used it for this purpose, as we lay down none but the fat part of the hog, which is not injured by an excess of salt. This has been denominated the

Knickerbacker Pickle.—Take six gallons of water, nine pounds of salt, three pounds coarse brown sugar, one quart of molasses, three ounces salt petre and one ounce pearlash—mix and boil the whole well, taking care to skim off all the impurities which rise to the surface. This constitutes the pickle. When the meat is cut, it should be slightly rubbed with fine salt, and suffered to lay a day or two that the salt may extract the blood; it may then be packed tight in the cask, and the pickle, having become cold, may be turned upon and should cover the meat. A follower, to fit the inside of the cask, should then be laid on, and a weight put on it, in order to keep the meat at all times covered with pickle. The sugar may be omitted without material detriment. In the spring the pickle must be turned off, boiled with some additional salt and molasses, skimmed, and when cold, returned to the cask.

For domestic use, beef and pork hams should not be salted the day the animals are killed, but kept until its fibre has become short and tender, as these changes do not take place after it has been acted upon by the salt.

Meat that is to be dried and smoked, requires less salt than that which is to remain in pickle, on account of the preserving qualities of pyrolignic acid, which is supplied by the smoke of the wood. The great art in smoking meat well, seems to consist in having the meat dried by smoke, and not by heat. The hams of Westphalia and the smoked beef of Hamburgh, which are unrivalled in reputation, are managed in this way. The Westphalian farmers have a closet in the garret, joining the chimney, made tight, to retain smoke, in which they hang their hams and bacon to dry, out of the effect of the heat of the fire. Two apertures are made from the closet into the chimney, and a place is made for an iron stopper to be thrust into the funnel of the chimney, to force the smoke through the lower hole into the closet. The upper hole must not be too big, because the closet must be always full of smoke, and that from wood fires.

The Hamburgh method of making their superior smoked beef is this: Fires of oak chips are built in the cellars, from whence the smoke is conveyed by two chimnies into the fourth story, and thrown into a chamber by two openings placed opposite to each other. The size of the chamber is proportioned to the quantity of meat to be smoked, but the ceiling is not raised more than five feet and a half from the floor. Above this chamber there is another made with boards, into which the smoke passes through a hole in the ceiling of the first, whence it escapes by openings formed in the sides. The pieces of meat are hung up at the distance of a foot and a half from each other, and a fire is kept up night and day for a month or six weeks, according to the size of the pieces.

PRESERVING ROOTS.

We find in Chaptal's "*Chemistry applied to Agriculture,*" an excellent chapter on the preservation of animal and vegetable substances. We extract the following from the preliminary remarks.

"The nature of all bodies which have ceased to live or vegetate, are changed, as soon as the physical or chemical laws, by which they were governed cease to act; the elements of which they were composed then form new combinations, and consequently new substances.

"Whilst an animal lives, or a plant vegetates, the laws of chemical affinity are continually modified in its organs by the laws of vitality; but when the animal or plant ceases to live, it becomes entirely subject to the laws of chemical affinity, by which alone its decomposition is effected.

"The principles of the atmospheric air which is imbibed by the organs of living bodies, whether animal or vegetable, are decomposed and assimilated by them, whilst dead bodies are decomposed by its action. Heat is the most powerful stimulant of the vital functions, yet it becomes, after death, one of the most active agents in the work of destruction. Our efforts, then, for the preservation of bodies, ought to be directed to counteracting or governing those chemical or physical agents, from the action of which they suffer; and we shall see that all the methods which have been successful, are those which have been formed upon this principle.

"The chemical agents, which exert the most powerful influence over the products of the earth, are air, water and heat; the action of these, however, is not equally powerful over all classes of plants; the soft and watery, and those which approach the nearest to animal matter, decompose most readily: the principles of such are less coherent, less strongly united than that of others; so that the action of disorganizing agents upon them is prompt and effectual.

"All the methods now employed for the preservation of bodies, consist in so far changing their nature, as to deprive them of the elements of destruction contained within their own organs; or in secluding the substances to be preserved from contact with the destructive agents mentioned in the preceding paragraph; or in causing them to imbibe certain other substances, the anti-putrescent qualities of which counteract all action, whether of internal or external agents.

"In all vegetable products, water exists in two different states, one part of it being found free, and the other in a state of true combination; the first portion, not being confined except by the covering of the vegetable, evaporates at the temperature of the atmosphere; the second is set free only at a temperature sufficiently high to decompose the substances containing it: the first, though foreign to the composition of the vegetable, enters into every part of it, dissolving some of its principles, serving as a vehicle for air and heat, and being converted by cold into ice; by these several properties it greatly facilitates decomposition: the second portion, from which no evil of the kind arises, is found combined and solidified in the plants, and its action is thus neutralized."

Drying fruits, then, in order to preserve them, consists in depriving them of the water contained in them in a free state. This may be done by subjecting them to heat not exceeding 95 to 113°—either by exposing them to the sun, or in a stove room, or in ovens, which latter practice is resorted to, even in the warmest countries, at the commencement of the drying process. *In preserving the apple*, for instance, our author adds, that by depriving their surface of all moisture before putting them up; keeping them in dry places, where the temperature will be constantly between 50 and 54°, and by separating the fruits that they shall not come in contact, they may sometimes be preserved 18 months. The farmer in Schoharie, who has been in the habit of bringing the Spitzenbergh to our market on the 4th of July, owes his success to the observance of these rules.

On the preservation of the fruits of the earth by secluding them from the action of air, water and heat, M. Chaptal enumerates the following leading causes of decay.

"The atmospheric air, coming in contact with fruits, depives them of their carbon, and forms carbonic acid.

"Fruits exposed to the solvent action of water suffer decomposition, by having the affinity existing between their constituent principles weakened, and at length destroyed.

"Heat dilates the particles of bodies, and thus diminishes the force of cohesion and attraction, and favors the admission of air and water.

"The combined action of these three agents produces very speedy decomposition; the effect produced by any one of them is slower, and the results different. So that in order to preserve fruits from decomposition, it is necessary to guard them from the power of these three destroyers."

Practically applied, these axioms teach, that to preserve roots in good condition, the following precautions should be observed:

1. That their surfaces be entirely freed from moisture before they are housed or buried, and that they be deposited in a dry situation, where water will not have access to them.

2. That they be excluded from the air, by burying them in dry earth, or slightly covering them in the cellar with earth. And,

3. That they be kept in a cool temperature—the best ranging from 34 to 45 degrees.

We frequently hear housekeepers complain, that their potatoes, turnips and other vegetables soon deteriorate, and lose their fine flavor, after they have been a short time in their cellars. This is a natural consequence of the injudicious way in which they are too frequently kept—exposed to the atmosphere, and to a high temperature, in a cellar adjoining the kitchen, or perhaps in the kitchen itself Again, potatoes or turnips buried in a wet condi-

tion, or the latter with parts of their tops left on, are very liable to ferment and spoil. We find it to be a necessary precaution in burying turnips, to make one or more holes in the crown of the pit, to let off the rarified air, and abate the heat which is almost invariably generated on their being buried.

In preventing the total loss of potatoes that have been affected by frost, Thomas Dallas directs, that when they are slightly touched by the frost, it is only necessary to sprinkle the roots with lime to absorb the water under the skin; that when the outer portion of their substance is frozen, the tubers may be pared, and thrown for some hours into water slightly salted; and that when they are wholly frozen, they will yield, upon distillation, a spirituous liquor resembling the best rum, and in greater quantity than roots which have not been frozen.

The quotations we have made above are invaluable to the farmer and house keeper; and if the principles which they establish are understood and practised upon, we shall have no cause to regret the length to which we have extended this article.

FORTY YEARS AGO.

Forty years ago, William Strickland made a report to the British Board of Agriculture, on the condition of American Husbandry, the result of travel and observation among us. We quote from this report the remarks upon the mode and products of New-York farming, with the view of showing with what fidelity the bad practices of '94–95, are still persisted in by a portion of our farmers, and of enabling the reader to note the marked difference between the *good* farming of that and the *good* farming of the present day.

"The course of crops in this state" [N. York] says Strickland, "is as follows: first year maize, second rye or wheat, succeeded immediately by buckwheat, which stands for seed; third flax or oats, or a mixed crop; *then a repetition of the same thing, as long as the land will bear any thing*; after which it is *laid by*, without seed, for OLD FIELD; or, *burn the woods*; 1 wheat, 2 rye, then maize for four or five years, or *as long as it will grow*; then *lay it by*, and begin on fresh woodland; or, burn the woods, then wheat four or five years; then one or two maize, or *as long as it will grow*, then laid by for four or five years for OLD FIELD, *without seeds*. A Dutchman's course on the Mohawk: first year wheat, 2 peas, 3 wheat, 4 oats or flax, 5 maize. In his father's time, the produce of wheat used to be 20 bushels an acre; but he complained much now, that his land only produced ten bushels. The best rotation I have met with was in Dutchess, where it much prevails: 1 wheat, 2 and 3 pasture without seed, 4 maize, or flax, or oats, or a mixed crop. In a good season this produced about 15 bushels, more commonly twelve. *Manure is rarely made use of*; but what little is collected is given to the maize, which requires every support that can be bestowed upon it."

"Clover is just beginning to be cultivated, in consequence of which; good pasture and plenty of hay take place of *old-field*, and by the use of gypsum astonishing crops are obtained."

"The average produce of wheat in the state of New-York, has been stated to me by very intelligent persons, at twelve bushels to the acre; which agrees with the general opinion, and, I believe, is as high as ought to be stated. The average of Dutchess county, which under a proper cultivation would be a most productive, as it is a most beautiful, country, at 16 bushels: 20 bushels are every where a great crop. The average of maize may be above twenty-five bushels; thirty is a great crop. With a mode of agriculture as before stated, it is not to be wondered at that the produce should be so small, and it will be found that the average of this state is superior to that of any other in the union."

"Should this deduction [interest on capital and expense of cultivation] be made, little profit can be found in the present mode of agriculture in this country, and I apprehend it to be a fact, that it affords a *bare subsistence*."

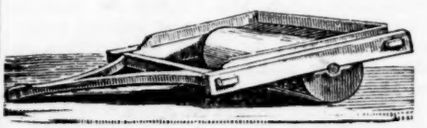
"The wheat of New-York is esteemed the best in the United States, and that grown on the banks and branches of the Mohawk the best in the state."

Thus far our extracts. It will strike every observer, that the wretched system here described, which procured a "bare subsistence" to the cultivator, particularly so far as regards the repetition of the farm crops, so long as a field will bear them, and the *old field* system, is yet very much in vogue in many districts. While on the other hand, what astonishing strides have been made in other districts, and on well managed farms, where a judicious rotation has been adopted, manures carefully husbanded, and artificial grasses multiplied. The mean corn crop, where there is good farming, is at least 40, and the maximum is often 80 and 100 bushels on the acre; wheat 20, and reaching as high as 40 and 50; and, instead of *old fields*, pastures clothed in perennial verdure; Dutchess, we apprehend, has quadrupled her products, and is now, as she was then, the best cultivated county in the state, if not in the union. We wish we could say as much for the banks and branches of the Mohawk. These, we fear, are still retrograding. Wheat is no longer the great staple of the Mohawk, nor does it *now* surpass in excellence. Whence this difference—but in the progressive improvement of the mind, the great lever to human industry—in the one more than in the other district.

Ruta Baga.—John Cousin, of St. Simons, Georgia, publishes in the Farmers' Register, that he raises corn and ruta baga, in alternate rows, and that the turnips prove a better crop than the corn. He plants his corn in rows five feet apart; in August and September, he tops his corn and strips the blades, and *then* sows his turnips, with a light dressing of manure, between the rows of corn. The next season, he plants corn in the turnip rows and turnips where the corn grew. Mr. Cousin, by carrying the turnip growth into the cool weather of autumn, obviates the great difficulty of growing this northern product in a southern latitude. He does not sow till the heats of summer have past, while a mild autumn and winter brings the crop to maturity. These facts we hope will not be lost upon our southern readers.

We find by another communication in the same paper, from J. H. Gibbon, of Philadelphia, that this crop is *now* cultivated, and its value highly extolled, in the neighborhood of that city. Mr. G. commends it for all cattle; thinks that cows thrive better upon the roots in their dirty state, and that it gives to their butter, (in winter) the flavor and appearance of grass butter; that in fattening cattle, Swedish turnips, sprinkled with corn meal, give the meat a finer quality, juice and relish. Mr. G. has an ingenious substitute for the drill barrow, in sowing, viz. a porter bottle, with a quill fixed in the cork, having a hole of sufficient size in the small end of the quill. He does not earth the plants, but rather draws the earth from them; his crop averages 300 bushels the acre.

THE ROLLER,



Is constructed of wood, stone or cast iron, according to convenience, or the purposes for which it is used. In American husbandry, we have yet no reason to expect, or perhaps desire, any but those made of wood, and such as any farmer, who has a moderate degree of mechanical skill, and the carpenter's tools which every farmer ought to keep, may readily construct himself. A good sound oak log, with the frame and shafts appended, makes a good roller. They are made of different lengths, and sizes varying from 15 to 30 inches in diameter. The lighter kinds are made in one piece, but the larger and heavier kinds are advantageously made in two pieces, with an iron rod passing through the centre of both, and upon which they revolve. English farmers construct the frame so as to rise above the roller, upon which a box is fixed, either to contain stones to add to the pressure of the roller, or to receive small stones and rubbish, collected on the field while at work, which are to be carried off. Their shafts, when at work, are generally horizontal. We think the roller is more easily drawn when the draft is on a right line from the collar or yoke of the team to the point of resistance. This may be done and the advantages of the box retained.

The uses and advantages of the roller are many and important, and no farmer should be without one. They are particularly important in the seeding process, to break down the clods, pulverize and smooth the surface, and to press the earth to the smaller seeds, which otherwise often fail to germinate for lack of moisture.—This is particularly the case with oats, barley and the grass seeds. In autumn the roller is sometimes passed over winter grain, with a view to counteract the effects of frost the following winter. In spring it is advantageously passed over winter grain, as soon as the ground is so solid and dry that the feet of the cattle will not poach the surface. It renders light ground more compact; presses the soil to the roots of the grain and thus promotes their growth; and upon all soils closes the innumerable cracks and fissures which abound on the appearance of dry weather in spring, and, by partially burying the crown, causes grain to tiller better, that is, send up more seed stalks. Finally, the roller is of great advantage to grass grounds in the spring, by reducing inequalities of surface, and pressing down the plants or earth which have been thrown up by the frost.

There are also rollers for other purposes, viz. the *spiked roller*, which is used for pulverizing stiff soils, preparatory for wheat,

This is formed by inserting several rows of spikes, or cast or wrought iron darts, in a common hard wood roller. The *concave* or *scalloped roller* is adapted to the form of ridges, and is often attached to the turnip drill.

The Season has virtually terminated, as regards the crops of this year. The corn crop will be a light—very light one—not much if any more than half a fair average, in this and neighboring counties. We have not had the usual *hot* weather. We have seen the thermometer but once over 90° during the summer, and then it was but 91°. The ground has at no time, therefore, received its accustomed warmth—and consequently vegetation is at least two weeks later than ordinary. We visited Otsego in the middle of last month. The oat crop, which is unusually large and productive, was then mostly standing, or in the field. Some barley remained to be harvested, and in some instances we saw the farmers still gathering their hay. We learnt, that in the counties lying upon the head waters of the Susquehannah, the corn had been much injured by the frost of the 4th August, and that the frosts of the first half of September, had seriously augmented the calamity. Hardly enough has ripened well for seed the coming year. Throughout the north part of the state, the crop, we fear, is thin, light and late. This lesson should admonish our farmers to select for future culture, the earliest varieties, and to plant early. We would suggest, as further precautions, to underdrain corn grounds, if they are not perfectly dry in early spring—and to dung well with *unfermented* dung. This will enable them to plant early, and will accelerate the growth and maturity of the crop from ten to fourteen days.

The backwardness of the season is not only indicated by farm crops, but by the products of the garden, and the indigenous plants of the forest. The fruits of the former, particularly grapes, have been unusually late, and many did not reach their accustomed maturity before they were cut down by the frost. We apprehend serious damage to the hop crop, which in frosty situations could hardly have had time to ripen well.

Sheep.—Our correspondents, it will be seen, differ upon the relative profits, to the farmer, of different breeds of this animal. While these differing opinions are maintained with decorum, they serve to enlighten the public mind as to the good qualities of each. The Merino and the Saxon, we believe, had a common origin at no remote period; and their present difference is owing to breeding and climate. Upon the same farm, and under a like management, they will probably again approximate more and more to each other. It seems to be a well established fact, that the fleece of a breed cannot be improved in fineness except at the expense of carcase; nor the carcase improved, by high keep, or cross with a larger breed, without deterioration in the quality of the fleece. A friend a few days ago, informed us, that by graining some fine fleeced sheep, during the last winter, he had added half a pound to the weight of their accustomed fleece, but that this increase in weight was made at the expense of quality; and he doubted whether the intrinsic value of the fleece had been increased. Another fact is worth remembering—the sheep, like the horse and ox, "is vastly modified in its form and characters by the physical condition of the countries in which he is naturalized."—*Low.* If fed in a country of plains and rich herbage, he tends to become large, his fleece heavy and comparatively coarse. If in an elevated country, where the herbage is scanty, the size and fleece diminish, while the texture of the latter is improved.

Agricultural School—Pattern Farm.—We invite the reader's attention to the communication of the Hon. James Barbour, which we copy to-day from the Farmers' Register, with the accompanying remarks of the editor of that paper. Although written for Virginia, by one of her most eminent statesmen, the remarks apply with equal force to New-York; and we cannot but hope, that the friends of agricultural improvement (and who are not professedly such?) in our state, will adopt some efficient course to speak so that they can be heard, and their wishes respected, on these and other subjects of abiding interest to our country.

The difference between ripe and unripe fruits, is strikingly illustrated in the following table, which we copy from Chaptal. Whether used in the kitchen, for the dessert, or for cider, the intrinsic value of fruits depends in a great measure upon the relative quantity of sugar they contain, this being principally what imparts to them nutritive and grateful properties. Although the experiment was made upon the apricot, the principle, it is believed, will hold good in regard to the apple, and most of the garden fruits.

	Apricots very green.	More advanced.	Ripe.
Animal matter,	0.76	0.34	0.17
Green coloring matter,	0.04	0.03	0.10
Woody substance,	3.61	2.53	1.86
Gum,	4.10	4.47	5.12
Sugar,	*some appearances.*	8.64	16.48
Malic acid,	2.10	2.30	1.80
Water,	89.39	84.49	47.84

THRESHING MACHINES.

Two new machines have fallen under our recent notice, ***Shaw's*** and ***Pitt's***. They are both from the far east, always prolific in inventions. They are sold at moderate prices, are of two horse power, and *promise* to perform well. As both of these machines will probably be exhibited at the Fair on the 13th and 14th October, we rather await the opinion of the examining committee than hazard our own prematurely, on their relative merits.

The proprietor of the latter (***Pitt's***) has handed to us the certificates of a number of Maine farmers, and of a committee of the Kennebeck Agricultural Society, commendatory of his machine. The latter say, "the improvements appear to be—1, a greater ease for the horse, [two are more advantageously used.] 2. Less weight in the machine. 3. Less expense to the purchaser."

THE IMPOLICY OF MEASURING LIME BY WEIGHT.

"Bishop Watson found by experiment, that upon an average, every ton of limestone produced 11 cwt. 1 qr. 4 lbs. quick lime, weighed before it was cold; and that when exposed to the air it increased in weight, *daily, at the rate of a hundred weight per ton,* FOR THE FIRST FIVE OR SIX DAYS after it was drawn from the kiln."—*Park's Chemistry.*

Notwithstanding this palpable fact, the common council of the good city of Albany have ordained, that lime shall be bought and sold by weight in our market. The consequence is, that the seller, by exposing his lime to the air, for *six* days after it is drawn from the kiln, adds to its weight, and consequent value in the market, more than 25 per cent, and the buyer pays for this amount over and above the true value of the lime. A ton of fresh well burnt lime will absorb and solidify 680 lbs of water, without any sensible deterioration, to a superficial observer, in its quality, and without the lime being slaked. One bushel of fresh burnt stone lime will make two bushels of slaked lime. The buyer should, therefore, obtain it in the stone, fresh drawn from the kiln, and buy by measure, and not by weight.

Weeds exhaust the fertility of the soil as much as cultivated plants. Though it may be too late to prevent their growth the present season, it is not too late to destroy the seeds of many which have been permitted to attain maturity, and the labor of doing this will be amply repaid another season, in the comparative cleanness of our gardens and fields. It is particularly the fault of farmers to neglect their gardens after midsummer, and to suffer them to be overgrown by rank weeds, whose seeds multiply a hundred fold. A day or two employed in the early part of the present month, in collecting them from the garden and fields, will be profitably spent. They may be thrown into the cow-yard or on a dung-pile, where fermentation will generally destroy their vitality before the dung is carried to the field in the spring. They had better be collected and burnt, than suffered to spread their seeds over the farm.

To preserve Cellery.—Get up the cellery on a fine dry day, before it gets injured by frost, cut off all the leaves and roots, [fibrous roots] and lay it in a dry airy place for a few days, then remove it to a cool cellar, where it will be quite secure from frost, and pack it up with sand, putting layers of sand and cellery alternately.—*Loudon.*

The Grain Worm has reached as far west as Minden, between fifty and sixty miles west of Albany. A farmer residing there informed us, that there were some of the worms in his wheat, and that seven miles east of him they had destroyed half of the crop.

To destroy lice upon cattle.—H. H. C. in the Farmers' Register, recommends "the use of a little flour of sulphur, given internally once or twice a week, with salt, which is eaten kindly," and which he says he has practised with great success.

CORRESPONDENCE.

STACKING HAY—DUTTON CORN, &c.

Hamptonburgh, Orange Co. September 7th, 1835.

J. BUEL, Esq.—Having recently, in consequence of impaired health, relinquished an active business in the city, our great commercial metropolis, for the more quiet, retired, and I would hope more healthful occupation of an agriculturist, I take the liberty of making some inquiries in regard to my new employment, through the medium of your most interesting and useful publication, the Cultivator.

There is just now one subject strongly on my mind, to which I will first call your attention. I refer to the mode almost universally pursued in this vicinity, and indeed so far as my observation extends, in this county, of securing hay, stalks, &c. for winter use, in stacks scattered in various parts of the farm. I came to the country strongly opposed to this, as I considered it a doubly wasteful practice. But when I find our best and most intelligent farmers, men who have acquired wealth by their system, defending the practice both by argument and example, I am almost staggered in my intention of putting up preparatory for the ensuing season, additional buildings to secure the hay, &c. which we are now obliged to stack, and to afford shelter to the stock of cattle from the severity of our winter storms. The opinions of such men are entitled to much respect, but still I am not altogether convinced that theirs is the better practice. They say it saves much labor in the carting of both hay and manure. I say it occasions a ruinous waste of both. They also say, and this view of the subject is of much moment, that cattle do not do well confined to a yard or sheds and stalls; that they thrive and do better in the open field, exposed to all the inclemencies and changes of the weather. Of this I cannot judge from experience, but as it is a matter of deep interest to the grazier, I shall be thankful to you, Mr. Editor, for more light on the subject.

Much has been said on the advantage of cutting hay and straw both for horses and neat cattle, and the estimates have been various as to the amount of saving in provender, but all agree in making it very large; none I believe less than one half Can this, Mr. Editor, be correct? Can it be possible that so much is wasted in the usual mode of feeding cattle? If one half can be saved by this method, it follows of course that double the quantity of stock can be wintered, and how much would this add to the manure and to the profits. But what has been your own experience? for plausible theories and hear-say stories will not do; facts, well authenticated facts, are all we can depend on.

Should you recommend this mode of wintering our stock, you will see the necessity of informing us where we can obtain the most approved kind of cutting machine; a kind not too expensive will be required to come into general use. Will it answer to cut corn stalks for our cattle? It strikes me a great saving would be realized in that article, provided the whole would be eaten, if cut.

Our corn crops in this region promise to be abundant. A few days more exemption from frost will put it beyond its reach. Last spring before leaving the city, I procured a few ears of your Dutton corn of my friend, Thorburn, which I had planted. I am much pleased with it; it is very productive, and is now ripe. We shall commence cutting it up at the ground to-day or to-morrow.

Excuse this long epistle. My anxious desire to profit by your knowledge and experience in a business new to me, and in which I shall doubtless commit many blunders, but a business to which, nevertheless, I feel much attached, must be my apology. W. W. I.

BY THE CONDUCTOR.—Our correspondent will find most of his queries anticipated in our last paper. But we repeat our strong conviction, that the feeding hay from the stacks in the field is a most wasteful and slovenly practice. Much of the hay is certainly wasted, and the manure is virtually lost. If hay *must* be stacked out, there is economy and neatness in putting it in large masses, and thatching it well, to preserve it from the injurious effects of storms and winds; of cutting it down, and carrying it to the barn, when required for use. In regard to corn stalks, we have a machine to cut them, worked by hand, the knives of which move horizontally. It works expeditiously, was bought in this city, and cost $20. We intend to scald the cut stalks the coming winter, for our cows, and to feed them while warm, sprinkled with ship stuff. In regard to the best straw and hay cutter, we are disposed to give the preference, at present, from our partial knowledge of the many in use, to Green's patent, the description, cost, and performances of which are noticed in another column of this paper. We have not hitherto cut our hay, but intend doing it the coming winter, when we shall be better qualified to answer our correspondent as to our own experience.

ORIGINAL CHINA HOGS.

Mr. BUEL—Sir—Having been disappointed in procuring a drawing of one of my Berkshire hogs in time for this number, I have substituted the original China, which I have copied from Loudon's Encyclopedia of Agriculture.

The finest specimen of this breed which I recollect ever to have seen, was a sow and litter of pigs exhibited at the Albany County Fair and Cattle Show in 1824, by the late Thomas Hillhouse, of Watervliet. They were perfectly black, and excited the admiration of all who saw them.

Yours, &c. C. N. BEMENT.

"*Original China Hogs.*—The Chinese hog is distinguished from the common, by having the upper part of its body almost bare, its belly hanging nearly to the ground; its legs are very short, and its tail still more disproportionately short. The flesh of this variety is whiter and more delicate. The colour is commonly a dark grey. It abounds in China, and is diffused through New-Guinea, and many islands in the South Sea. The new Hebrides, the Marquesas, the Friendly and the Society Islands, possess this animal, and cultivate it with great care, as it is almost the only domestic animal of which they can boast. The varieties of hog cultivated in Britain, are partly the result of climate and keep, in the European variety, and partly the effects of crossing with the Chinese. At the same time, it is only in particular districts that so much attention has been paid to this animal, as to give rise to any accurate distinction of breeds; and no where has it received any considerable portion of that care in breeding, which has been so advantageously employed on the other animals of which we have treated. Yet, among none of the varieties of these is there so great a difference as among the breeds of this species, in regard to the meat they return for the consumption of a given quantity of food. Some races can with difficulty be made fat, even at an advanced age, though fed from the trough with abundance of such food as would fatten any other animal; while others contrive to raise a valuable carcass out of materials on which no other creature could subsist."

"*The Chinese race*, according to Cully, has been subdivided into seven varieties or more; and it would be easy to point out twice the number of as prominent distinctions among the sorts in the third class. But such an affectation of accuracy is as useless as it would be tedious. One general form, approaching to that of other animals kept for their carcass, ought certainly to be preferred; and the size which is the other distinguishing characteristic, must be chosen with a view to the food provided for their maintenance, and not because it is possible to raise the individuals to a great, and probably, unprofitable weight. The fineness of the bone, and the broad, though also deep, form of the chest, denote in this, as in the other species, a disposition to make fat with a moderate consumption of food; and while it may be advisable to prefer the larger breeds in those places where bacon and flitches are in most demand, the smaller breeds are most esteemed for pickling, and are beyond all doubt, most profitable to those farmers who allow them little else than the range of the farm yard, and the offals of the kitchen."

To the Editor of the Cultivator:—Sir—For the last seven years I have been in the practice of cutting my hay, straw and cornstalks, for my horses and cattle, and can assure you, have profited much by the use of the cutting box; not only by the great saving of hay, but by the superior condition in which my stock are wintered. Some pretend to say that one-half is saved, but I think that is asking a little too much—one third, I think, would be a fair calculation.

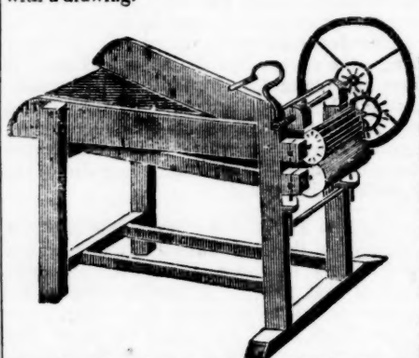
By cutting, the coarsest hay, cornstalks, and straw may be used to advantage. My corn, last year, was cut near the ground, and cut and fed out to my cattle in January, which they ate readily, and throve well on them, with hay at noon.

In feeding sheep, I found it particularly useful, as when cut they would eat with avidity, that when fed long they would reject.

I have used, until last winter, one of Safford's cutting machines, and supposed it the best one in use, until I accidentally found one of *Green's* patent, which I think, exceeds all others, that has fell under my observation, in execution, with the small power required.

For a particular description of the machine, I cannot do better than give you the following, from the New-York Farmer and Gardeners' Magazine, with a drawing.

ŒCONOMIST.



"*Greene's Straw Cutter.*

"This is the most simple and efficient machine of the kind that has yet been offered to the public. It is made very strong, and not liable to become injured, nor to get out of order. The apparatus consists principally of two cylinders; the upper one is of iron, having the requisite number of knives secured in groves. The under cylinder is of lead, and can be raised or lowered, so as to have the knives merely to come in contact with it. It will be perceived that the knives perform the double operation of cutting and feeding. All that is necessary in operating is to put in the straw, and turn the crank. After the straw is once cut, it can be put in again, and cut, with increased rapidity, the second time. More than double the quantity can be cut in the same space of time by this than by any other machine, used in this section of the country.

"I set a man at the crank, and with the hay close to the machine commenced feeding. With my utmost exertion, I could not keep it regularly supplied. In *five minutes* we cut *eleven bushels*, heaping measure, of hay. Had it been fed according to its power of execution, one-fourth more would have been cut.

Had I used straw instead of hay, the quantity cut in the above time would have been as great, as it is more easy to supply the machine without interruption. It cuts cornstalks with rapidity, particularly small ones. The box is made large, and by putting a good deal of hay in at once, or by having it close to the machine, one person can feed it and turn the crank at the same time."

The above machines may be obtained by applying to C. N. Bement No. 82 State-street, Albany.—Price $30.—*Cultivator.*

SAXONY SHEEP.

J. BUEL, Esq.—The August number of the Cultivator contains an extract from the reply of Mr. Henry D. Grove, (published in the N. York Farmer,) to a communication signed "R." in the May number of the Cultivator, on the subject of the relative profits of different breeds of sheep. Mr. Grove, after conceding to R. all that he claims in respect to the quality and quantity of the wool of the English breeds, (Bakewell and South Down,) shows by *facts*, that the pure Saxon, under judicious management, give a greater return of wool, in value. The most liberal allowance for weight and fineness, according to Mr. Grove's estimate, brings the South Down to only $2.12 the fleece, and the Bakewell $2.31, while Mr. Grove's Saxon fleeces, at 80cts. will fetch him $2.40. This estimate allows the Bakewells 1 lb. more a head than is claimed for them by their advocate, R. Deduct the value of this (33cts.) and they stand only $1.98 a fleece.

Mr. Grove, as he himself states, was trained up a shepherd in Germany, and of course, is presumed to be perfectly familiar with the constitution, habits, wants, &c. of the Saxon sheep. It struck me on reading his communication, that for these very reasons, the impression might be received that the productiveness of *his* flock, would not be a fair specimen of that of Saxon flocks generally, as it might, very reasonably, be supposed that his superior knowledge and care in the selection and management of this breed, would give him the advantage over the other growers. That this distinguished importer had succeeded in obtaining a more productive stock than those who have purchased haphazard, and without judgment; who because a sheep is imported, *take it for granted* that it is perfect; and more especially that class of buyers who have regarded *fineness only*, preferring for instance, a buck shearing 2½ lbs. to one shearing 4 lbs. where the first happened to be a barely perceptible shade the finest;—I say that Mr. Grove excels, and entirely excels such, is neither untrue, nor is it surprising. But to show that his estimate of the productiveness of the Saxon breed (in wool) is not exaggerated in the flocks of those who BEGIN RIGHT, I subjoin the following statement.

Mr. Hamilton Rogers, of Truxton, in this county, sheared a large flock of young 'full blooded' Saxon ewes, which had not obtained their full growth, the average weight of the fleeces of which was 3 lb. 9 oz. They are descended from the flock of Mr. Grove. The wool sold at 80cts. —making $2.85 to the fleece on not fully grown sheep.

I will give you another instance, though not proving so much, as the flock alluded to (like most of those of Bakewells and South Downs, from which the breeders of these kinds have drawn their estimates,) is a very small one of picked sheep. I have among my sheep a lot of pure Saxon yearlings, which clipped this spring, 3 1-5 lbs. a head. I sold the wool at 80cts. which brought me $2.56 to the fleece. This excels the South Downs by 44cts. according to Mr. Grove's estimate, which I believe to be a liberal one, and the Bakewells by 58cts. taking R.'s own estimate!

Yours truly, H. S. R.

Cortland Village, Aug. 20, 1835.

J. BUEL, Esq.—Sir— In your last number I mentioned a remedy for the foot rot in sheep, but was not perhaps sufficiently particular in describing the manner of applying the remedy, as several gentlemen have applied to me since its publication for more explicit information. I therefore will state that for an effectual application of the medicine too much care cannot be taken, and that the cure will not be certain unless the remedy is applied to every hoof in the flock effected indiscriminately. I have adopted the following method. I yard my sheep near a stream of shallow water, one person then washes the sheeps' hoofs clean, and hands it to a second person, who holds it while a third pairs off the decayed parts and applies the medicine; those hoofs that are not affected of course will need no paring, but should have the liquid applied notwithstanding, as the disease is very infectious, and may exist in a latent manner. If the disease is of long standing, it gets into the blood of the animal, and in such case sulpher should be mixed with their salt at the rate of 2½ or 3 lbs. to each half bushel of salt; it physics their blood and drives the disease into their feet, which when cured removes the complaint. The sheep should run in dry pastures, as the disease originates from their being confined to wet and marshy land until the glands of the hoof swell and suppurate, after which it becomes infectious; the application of the medicine should be repeated as often as once in three or four weeks until the cure is effected.

Nelson, N. Y. Sept. 5th. S.

Crawford, Orange Co. Aug. 3, 1835.

Mr. J. BUEL,—The fact that our fruit trees generally alternate barrenness and fruitfulness, in a biennial period, is (I presume) known to all the inhabitants of this community. To change the habit of the trees by art, is a desideratum amongst the lovers of good fruit, such as apples, pears, peaches, plums, &c. To obviate barrenness, is the object of this communication.

It is well known to botanists and others, that the germ or bud of the future blossom is in an embryo state in autumn. Guided by that fact, I began with a peach tree on the 25th of August, whilst the sun was in the first degrees of Virgo, by making a strong decoction of hops, in quantity about 5 gallons, and poured it around the root of the tree in the evening. The subsequent season, (which would according to habit have been barren) the quantity and quality surpassed the products of any previous period. A repetition of the experiment for six or seven years, on the 25th of August, liberally remunerated me for the extra trouble and attention.

Encouraged by success, I tried the apple, pear, and plums (several species,) with similar success. But on account of the inconvenience of preparing the decoction, I substituted aloes, an half pound to six gallons of rain water, and applied it on the first of September. Repeated experiments will justify the assumption, that aloes is a catholican in the vegetable kingdom, both as a preventive and cure. It has proved a preventive to the malicious trespasses of a species of the wood-pecker perforating the bark of young apple trees, and a palliative to the ravages of the curculio. Whilst I commend to public attention, from a conviction of utility, the application of aloes to fruit trees, by painting the bodies, every spring, from the ground to the branches, (based upon actual experiments and observations during a quarter of a century) as an agent to accelerate the growth of the tree and ameliorate the fruit in quality and quantity, at the same time I will take the liberty to protest against a practice I have frequently seen in my tours through this part of the state, of painting the bodies of fruit trees annually with lime, (commonly called white washing.) Experience, the best of teachers, affirms, that the fruit deteriorates in quantity and quality, and the tree decays, and if repeated, will in less than seven years be useful only as fuel.

NATHANIEL GILLESPIE.

P. S. If the above communication should contain any new idea, you will confer a public benefit by publishing it in the Cultivator. With the author, the facts stated were the offspring of his own deliberations and experiments, not aided by the suggestions of any individual. But when I reflect on the numerous titles of books announced in the catalogues of our public journals, on horticulture and orchards, which I have never read, I deem it improbable that the principles commended have escaped the observation of so many laborious and indefatigable observers and investigators of the laws of the vegetable kingdom; nor can I calculate beyond mere conjecture, the difference that latitude, seasons, and soils, &c. may produce in the success or failure of those experiments. If any thing more in detail has been printed in any of those books which you habitually read, of a similar import, and better calculated to excite public attention, you will subserve the welfare of the community by devoting a column of your useful paper in giving it publicity. N. G.

Elements of Practical Agriculture,

By David Low, Professor of Agriculture, &c.

SUCCESSION OF CROPS.

As crops of the cultivated plants succeed to each other upon the same ground, a question to be determined is the order in which the different kinds should follow each other.

All plants which are cultivated, and which are carried from the ground where they are produced, tend to render the soil less productive, or, in the language of farmers, to exhaust it.

But plants which are suffered to decay, or which are consumed by animals on the ground on which they grow, do not exhaust the soil. On the contrary, the decay of the stems and leaves of such plants, either naturally, or by the consuming of them by animals, tends to add those decomposing organic matters to the soil which form one of the elements of its fertility. This process may be imperceptible and slow, but it is that which Nature herself employs to form the soil, as distinguished from what has been termed the subsoil.

Sometimes this process of decay is counteracted by the singular natural provision, of a conversion of the decomposing vegetables into a substance which itself resists decomposition—peat. But with this exception, the tendency of the decay of vegetables upon the surface is to add to the fertile matters of the soil.

This is well understood in the practice of agriculturists. When the productive powers of a soil have been exhausted by cultivation and the carrying away of its produce from the surface, it is laid down to herbage, in which state the future vegetation which it produces tends, by its decomposition upon the surface, to renovate the productive powers of the soil. Land in this state is said to rest.

When land, however, has been impoverished by successive crops, and has become full of weeds, the laying it down to rest in that state is attended with less beneficial consequences than when the soil has been previously cleaned of injurious weeds, and fertilized by good culture. In the former case, the process of renovation is slow, if perceptible at all; the

useless plants increase, and not those which are beneficial and afford food to pasturing animals. Land, when properly laid down to grass, therefore, tends to recover its wasted powers of production. Land not properly laid down has less of this healing property, and may be more full of weeds, and no richer when ploughed up again after a time, than when first laid down. Under good management, however, the laying down of cultivated land to grass and other herbage-plants to be consumed upon the ground, is a means of resting the soil, and renovating its powers of production; and this mode of recruiting an exhausted soil being always at the command of the farmer, its application is important in practice. It is to be observed also, that the poorer soils require this species of rest and renovation more than those which are naturally productive.

The experience of husbandmen from the earliest times has shown, that the same kinds of plants cannot be advantageously cultivated in continued succession. The same or similar species tend to grow feebly, or degenerate, or become more subject to diseases, when cultivated successively upon the same ground, and hence the rule which forms the basis of a system of regular alternation of crops is, that plants of the same or similar species shall not be cultivated in immediate succession; and further, the same rule has been thus far extended, that the same species shall recur at as distant intervals of the course as circumstances will allow.

All herbaceous plants whose produce is carried off the ground which produces them, may be said to exhaust the soil upon which they grow. But all such plants do not exhaust the soil in the same degree; for after some species the soil is seen to be more impoverished than after others.

And not only do different species of plants exhaust the soil in a greater or less degree than others, but the same species does so according to the different period of its growth at which the plant is removed from the ground.

When a herbaceous plant is suffered to mature its seeds, it exhausts the soil more than when it is removed before its seeds are matured. All herbaceous plants, therefore, when cut in their green state, that is, before they have matured their seeds, exhaust the soil less than when they remain until they have ripened their seeds. Thus the turnip, when used in its green state, is one of the least exhausting in the agricultural class of plants to which it belongs: but the turnip, when allowed to remain upon the ground until it has ripened its seeds, is one of the most exhausting plants that is cultivated amongst us; and so it is with the rape and others.

Further, certain plants, by the larger or smaller quantity of manure which the consumption of them afford, are more or less useful in maintaining the fertility of the farm.

When an herbaceous plant is suffered to mature its seeds, and when any part of these seeds is carried off the farm, the plant affords, when consumed by animals, a smaller return of manure to the farm than if the same plant had been cut down before it had matured its seeds, and been in that state consumed by animals. Thus it is with the turnip plant referred to. This plant is with us sown before midsummer. In the first season it forms a napiform root, and puts forth a large system of leaves. Early in the following season it puts forth a long stem, which bears flowers, and the seeds are generally matured about midsummer. If this plant is removed in the first stage of its growth, that is, after it has put forth its large leaves and formed its bulb, and is then consumed by animals, it returns a great quantity of manure; but if it remains until the second state of its growth, then the consumption of its stems and leaves returns scarce any manure. The juices of the root have apparently been exhausted in affording nutrition to the flower-stem, the flowers, and seeds.

It is beyond a question, that, in order to bring a plant to its entire maturity, by the perfecting of its seeds, a larger quantity of the nutritive matter of the soil is sucked up by it than when it is brought only to its less advanced stages. When crops of plants, therefore, are suffered to arrive at maturity, they are greatly more exhausters of the soil on which they grow than when they are cut down while they are green; and if those seeds are in whole or in part carried off the farm, the crops are exhausters of the farm, as well as of the ground which had produced them. Were the ripened seeds to be wholly returned to the soil, it may be believed that they might give back to it all the nutritive matter which had been derived from it. But, in practice, seeds are employed for many purposes, and are generally carried off the farm which produces them. When this is done in whole or in part, the plants produced are in an eminent degree exhausters of the farm, as well as of the soil on which they have grown.

Further, certain plants, from their mode of growth and cultivation, are more favorable to the growth of weeds, than other plants. The cereal grasses, from growing closely together, and not admitting, or admitting partially, the eradication of weeds, are more favorable to the growth and multiplication of weeds than such plants as the turnip and the potato which are grown at a considerable distance from each other, and admit of tillage during their growth; and whose broad systems of leaves tend to repress the growth of stranger plants.

Having these principles in view, certain rules may be deduced from them, for the order in which the crops of plants in cultivation in a country shall succeed to each other on the same ground.

1*st*, Crops consisting of plants of the same or similar species, shall not follow in succession, but shall return at as distant intervals as the case will allow.

2*d*, Crops consisting of plants whose mode of growth or cultivation tends to the production of weeds, shall not follow in succession.

3*d*, Crops whose culture admits of the destruction of weeds, shall be cultivated when we cultivate plants which favor the production of weeds. And further, crops whose consumption returns to the soil a sufficient quantity of manure, shall be cultivated at intervals sufficient to maintain or increase the fertility of the farm.

And, 4*th*, when land is to be laid to grass, this shall be done when the soil is fertile and clean.

These rules may be applied to the plants which form the subject of common cultivation in the fields. In this country, the plants chiefly cultivated on the large scale are,—the cereal grasses, chiefly for the farina of their seeds; certain leguminous plants, as the bean and the pea; plants cultivated for their fibres as the flax and hemp; for their leaves, roots, or tubers, as the turnip, the cabbage, and the potato; and certain leguminous and other plants for forage or herbage. The plants of these different classes are yet to be described; and they are now only referred to with relation to the order in which they may succeed to each other in cultivation. The 1*st* class of these plants consist of the cereal grasses. These are chiefly wheat, barley, oats, and partially rye. All these plants are in an eminent degree exhausters of the farm. They are all suffered to mature their seeds, and are wholly or partially carried away from the farm. Further, from the manner of their growth, and mode of cultivation, they all tend to favor the production, of weeds. For these reasons, and on the general principle that plants of the same or similar kinds should not follow in succession, the cereal grasses should not succeed each other, but should be preceded or followed by some crop, which either exhausts the soil less, or admits of a more perfect eradication of weeds.

2*d*, The leguminous plants cultivated for their seeds, as the bean and the pea, are all exhausters of the soil.* They ripen their seeds, and the seeds are for the most part carried off the farm. Some physiologist suppose that they are less exhausters of the soil than the cereal grasses. It is probable that they do exhaust the soil somewhat less than the cereal grasses. But the essential difference between them, when considered with relation to their effect upon the soil, is, that, from their growth, and the manner of cultivating them, they are greatly less favourable to the production of weeds than cereal grasses. By their broader system of leaves, they tend to stifle the growth of weeds more than the cereal grasses; and further, they admit of tillage during a great part of their growth. This is especially the case with the bean, [and maize] which is therefore regarded as a useful cleaning crop, and so is cultivated in rotation with the cereal grasses, as a mean of preserving the land clean.

3*d*, Hemp and flax, which are cultivated chiefly for their fibres, and all plants cultivated for their oils, are exhausters of the soil. They are suffered to form and ripen their seeds, and their stems afford no return of manure to the farm.

The next class of plants, form the large return of manures which the consumption of them affords, may be regarded as enriching or restorative crops, in contradistinction to the others, which may be termed exhausting crops:—

1. The turnip, the rape, and other plants of the cabbage genus, cultivated for their roots and leaves, and consumed upon the farm.
2. The potato, the carrot, the parsnip, the beet, and other plants, cultivated for their tubers, and roots, and consumed upon the farm.
3. The leguminous plants,—the clover, the tare, the lucerne, and others,—when cut green for forage, and consumed upon the farm.

The plants of the latter class, namely the leguminous, when mixed with gramineous plants, as the rye-grass, are commonly termed the artificial grasses, but would be more correctly termed the cultivated herbage or forage plants. They are often suffered partially to ripen their seeds, and are made into hay; and in this case they follow the general law, exhausting the soil more than when used green. And when the hay-crop is carried away from the farm, they are to be regarded as exhausting rather than restorative crops.

In speaking of these different classes of plants, the following terms may be employed:—

1. The cereal grasses may be termed Corn-crops.
2. The leguminous plants cultivated for their seeds, Pulse [and maize] crops.
3. The turnip, and other plants of the same kind, cultivated for their roots and leaves, may, with reference to the mode of consuming them, be termed Green crops; or, with reference to the manner of preparing the ground for them, Fallow-crops.
4. The potato, and plants of other families cultivated for their roots and tubers, may, in like manner, be termed Green or Fallow crops.
5. The leguminous plants cultivated for green food, as the lucerne and tare, may be termed Green Forage-crops.

And, lastly, the mixture of gramineous and leguminous plants cultivat-

* Indian corn may be included in this class of plants.—*Cultivator.*

ed for herbage or green feed, may, in compliance with common language, be still termed the Sown or Artificial Grasses.

Further, distinguishing these different classes of crops according to their effects upon the fertility of the farm, they might be divided thus:

1. Corn-crops,—exhausting crops, and favorers of weeds.
2. Pulse-crops—exhausting but cleaning crops, or capable of being rendered so.
3. Green or fallow-crops,—restorative and cleaning crops.
4. Green forage-crops,—restorative and sometimes cleaning crops.
5. The sown grasses,—restorative crops.

Knowing these the general characters of the cultivated plants, we have, in devising a rotation, to cause the restorative and cleaning crops so to alternate with the exhausting crops, as that the land may be preserved fertile and clean. Further, when we find that land cannot be sufficiently cleaned by means of cleaning crops, we must make use of the summer-fallow; and again, when we find that land requires rest, we may lay it down to grass for a longer or shorter time, taking care when this is done that the land shall be in as fertile a state as circumstances will allow, and free of weeds.

Science of Agriculture.

From Chaptal's Chemistry applied to Agriculture.

THE CHANGES PRODUCED IN PLANTS BY NOURISHMENT.

Plants are principally nourished through their leaves and roots; the first absorb from the atmosphere oxygen, carbonic acid, and water; and the second receive from the soil the oxygen and carbonic acid contained in it in a free state, or dissolved in water, and also the juices and salts which are mixed with the earth.

Water appears to be the necessary vehicle of nearly all the nutritive portions of the soil; so that it not only serves to nourish plants, by yielding to them the elements of which it is itself composed, but it conveys into their internal organs all the substances which can serve them as food.

The substances which chiefly afford nourishment to plants, present in their composition only carbon, hydrogen, and oxygen; the numerous products formed in the course of vegetation, do not upon analysis furnish any other principles: the salts, the earths, and the metals are generally found in them in very small quantities, and under a very different form from that in which they exist in the soil.

Strictly speaking, the three principles necessary to vegetation, are oxygen, carbon, and hydrogen, combined in various proportions; and it is this difference in the proportions which causes the immense variety in the vegetable kingdom; some hundredths more or less of carbon, oxygen, or hydrogen change the character of the body.

The chymist in experimenting upon dead plants produces at pleasure a part of these effects; fermentation and spontaneous decompositions give rise to a great number. But the constant uniformity of the products in the same species of plants, and the analogy existing between those derived from different species of the same genus; their variety in the different organs, and the peculiar compounds, apparently so complicated, of each one of them, form altogether so many phenomena beyond the power of art to explain.

We know the substances received by plants, and those which they reject; we determine by analysis the nature and the composition of the products which they form; but this is the utmost extent of our knowledge. All that passes within the plant is still a mystery, and belongs to the laws of vitality, which modify by their action those physical laws that are known to us.

However, as the laws of vitality governing vegetables are in their application less independent of the physical laws, than those that reign in the animal kingdom, we can even now raise a portion of the veil, and follow at least the progress of the changes, though we can as yet neither produce them nor discover their mode of action.

The germination of seeds and the swelling of buds in the spring, are almost entirely the result of physical laws: oxygen is the only agent necessary to produce them; water and heat are necessary auxiliaries, but they do not in any way enter into the new combinations; they only facilitate the changes that are going on. The oxygen unites with carbon to form carbonic acid gas; by this means the mucilage and starch are reduced to the state of a milky liquor, which serves as the first aliment of the young plant or twig.

As soon as the plant has unfolded its leaves, or the radicles of the seed have penetrated into the soil, the system of nourishment is changed: every part of the plant in contact with the atmosphere gives out carbon during the night, or when in darkness; but the carbonic acid which this forms with oxygen, instead of remaining in the air, as at the period of germination, is absorbed principally by the roots and leaves, and decomposed in the last by the solar rays; the carbon remaining fixed in the plant, whilst the oxygen is exhaled in the form of a gas. Plants are likewise nourished by that aqueous fluid which, constantly existing in the atmosphere in greater or less abundance, is, by the diminished temperature of the air during the night, deposited in the form of dew. The water contained in the soil dissolves the juices of the manures, and transmits them to the plants.

But in order that plants should flourish, it is not sufficient that they have at their disposition all their necessary aliments; it is further requisite, that the elaboration of these be favored by other causes possessing equal influence over vegetation.

I have already remarked, that leaves do not transpire oxygen excepting when exposed to the rays of the sun; so that the carbonic acid remains in the plant during the whole time that the solar rays are hidden. The establishment of this fact enables us to explain many of the most important phenomena of vegetation: we learn from it, why plants that grow in the shade never produce fruits having the same taste, perfume, or texture, as those borne by plants of the same kind growing in the sun; and why the various sorts of fodder and green herbs are of bad quality, when the sun has not access to them to facilitate the decomposition of carbonic acid and the elaboration of nutritive fluids.

Independently of the light of the sun, without which the plants cannot flourish, vegetation requires a certain degree of heat; buds generally do not begin to unfold till the atmosphere is at the temperature of from 50° to 54°; and vegetation gains strength in proportion as the heat of the atmosphere increases, provided that at the same time the earth be sufficiently moist for the water to convey to the plants the nourishment it contains, and to furnish to them the means of transpiration. The influence of temperature over vegetation is so marked, that we can see the latter diminish as the heat lessens, and resume its energies as that is augmented. Warmth renders the sap fluid, and quickens its circulation; cold thickens it and renders it stagnant. If a right degree of atmospheric temperature, the influence of the solar rays, or a suitable quantity of the aqueous fluid be wanting, the growth of plants is retarded. Thus we see it is not enough that plants are abundantly supplied with nourishment; it is necessary that the concoction of it should be favored by agents which concur in causing its digestion.

When the soil is too abundantly provided with manures, especially of kinds that may be easily conveyed into plants by water, their growth may be prodigiously increased: but if the digestive organs and the constant influence of the sun do not concur in elaborating their juices, the result will be, as I have before remarked, a kind of obesity; and none of the products will have either the savor or the odor that they would have acquired if the nourishment had been less abundant and better digested. It is not uncommon for fruits and herbs to yield the odor peculiar to the manure with which they have been nourished, when it has been too abundantly supplied.

The juices circulate in plants, not only with the same regularity of movement that we observe in animals more perfectly organized, but with a degree of force sufficient to carry them into all the organs, that they may receive in each one of them a peculiar elaboration.

The roots absorb fluids from the earth by means of their capillary vessels; but the force with which they are conveyed into the internal organs of the plant, and even into the leaves, where their carbon combines with oxygen, is superior to that of capillary attraction, and the weight of the atmosphere.

The celebrated Hales cut a branch of a vine four or five years old; this he cemented carefully into a glass tube bent in the form of a siphon, filled with mercury; by the force of the ascending sap alone, the mercury rose at the end of some days to 38 inches. M. Mirbel has confirmed this experiment, and added many others of great importance, but which would carry me too far from my subject.

As the sap circulates in plants by the aid of numerous vessels and cells, which have no rectilinear communication, the force with which the sap ascends may be explained by a principle deduced from the experiments of M. de Montgolfier, who has proved, that, by means of a very small force, liquids may be raised to an almost indefinite height, provided the pressure of the column of liquid be destroyed by numerous interceptions or valves.

The force with which the sap ascends is proportioned to the health of the plants, and the abundance of its transpiration; a stalk deprived of its leaves will raise less mercury than one retaining them; and trees having smooth, spongy leaves abounding in exhaling pores, such as the wild quince, the alder, the sycamore, the peach, the cherry, &c. raise it to a much greater height than those of which the leaves are varnished or dry. The beautiful experiments of Hales have verified these results.

All the water imbibed by the different parts of plants, but especially by the roots, is first employed in mixing the juices; and facilitating their circulation; it is then decomposed, and a part of it furnishes hydrogen, so abundant in the products of vegetation, but the greatest portion is evaporated, principally by the leaves, and thus maintains their temperature below that of the atmosphere during the burning heat of summer. Hales observes, that a sun-flower plant transpired by the leaves, in the space of twelve hours, 1lb. 14oz. of water.

The cold which begins to make itself felt in autumn, retards the movement of the sap; the fluids become thickened, the solids contracted, the leaves cease to inhale, and the roots no longer absorb nourishment from the soil, and at length the vital functions are suspended. The returning warmth of spring brings renewed life to the organs; the fluids and the so-

lids receive a greater expansion, circulation is restored, and the sap deposited in the vessels during the summer and earlier part of autumn, affords the first nourishment to plants.

The branches of trees that are lopped off in winter, put forth buds and stalks in the spring; a branch of a vine introduced during the winter into a hot-house, vegetated as it would have done in the spring, whilst that portion of it which remained exposed to the cold, experienced no change. Plants that have been browsed in autumn, do not put forth so early, nor with so much strength as those of which the roots, and the parts immediately surmounting them, have been preserved by mowing.

All agriculturists have observed, that young trees transplanted in the spring appear to flourish for three or four months, and then die; if when taken up they have examined their roots, they have almost invariably found that they presented no appearance of having increased; which proves that vegetation is carried on in the spring by the nourishment provided, and deposited in plants before the fall of the leaves.

The difference which exists in the vegetation of the same branch, one end of which is placed in the earth, and the other rising above it, must strike every observer. The part which is planted in the soil, sends forth roots, whilst that which rises into the air produces leaves; and if any part of the root be uncovered, so as to come in contact with the air, it produces stocks and leaves; whilst that which remains beneath the soil continues to grow as the root of them. All parts of plants then are organized by their growth in such a manner, as shall enable them, most conveniently, to imbibe at the same time their nourishment from the soil and from the atmosphere.

It is in the power of art to influence the flow of the sap, nearly at will. When the nourishment afforded by the earth is too abundant, it is but imperfectly digested, and is exclusively employed in the growth of the plants; a tree in this case produces neither flowers nor fruit, but expends all its strength in leaves and wood. To remedy this superabundance of sap, some of the roots may be separated; or what is still better, incisions may be made in the bark of the tree to cause the escape of a portion of the sap.*

If it be wished to facilitate the growth of the fruit, a portion of the branches may be pruned, and part of the fruit plucked off; in this way a greater quantity of sap may be supplied to the fruit that remains; tight ligatures upon the branches, and incisions surrounding them through the whole thickness of the bark, produce the same effect. The pruning of fruit trees is principally designed to limit the production of fruit to the quantity that can be properly nourished by the plant. The grafting which is practised upon trees of analogous species, only presents to the juices of the wild tree an organic tissue different from its own; in the cells of which the juices receive a peculiar elaboration, which changes the nature of their products.

It is not by an analysis of plants, nor by the proportion of their constituent principles, which can be extracted by water, that we can judge of the nutritive quality of vegetables, or other alimentary substances. I have already proved, that a nutritive substance, deprived of all its soluble parts by water, is capable, in the progress of its decomposition, of forming new and soluble compounds. It is only by experiments, and by the effects of this or that kind of food upon animals, that we can ascertain the difference existing between various nutritive bodies.

The digestive juices of the stomachs of animals and the organs of plants animated by vital powers, of which we are ignorant, have also their chymistry, with which we are unacquainted, and of which we can understand only the results. It is surely erroneous to pretend to determine the quantity of nourishment, by that portion which can be extracted from any article of food by water; but upon this principle Davy has represented the nutritive virtue of beets by the number of 136, and that of carrots by 98; whilst M. Thayer has by his experiments estimated that of the first to be 57, and of the last 98. Upon the same principle Davy has valued the effects of linseed cakes at 151, compared with those of beets as 136; while it has been proved that 70lb. of beets are hardly equivalent in nourishment to 10lb. of linseed cakes.

In order to estimate the nutritive merits of any substance, it is necessary to have less regard to its chemical character, than to the nature of the animal to be nourished by it, one is disgusted by that which pleases another; and this will decompose what that will reject; it is only by observation that we can decide.

These principles are still less applicable to the nourishment of plants, than of animals; because of the first it is necessary that their food should be presented to them, and in a state of solution or mixture; whilst the last seek theirs where it may be found, and make choice of such as are suitable for them; but in both cases the nutritive virtues of the food can be estimated only by the results of its elaboration in the digestive organs, and by the effects produced on the economy of the animal or vegetable. It should besides be remembered, that the nutritive qualities of the various products of vegetation depend less upon their weight, than their kind; and that a substance may be insoluble in water, which may, when acted upon by the gastric juices, become excellent food.

NOTE BY THE CONDUCTOR.

* We would call the reader's attention to the principle here laid down, as important in the management, not only of fruit trees, but of many of the crops of the farm. It is a common, but mistaken notion, that by putting fruit trees into rich ground, or rendering the soil very rich in which they grow, they may be forced into an early and abundant state of bearing. Precisely the reverse is the case; a great growth of wood may be induced; but the production of fruit, by this means, is in a measure prevented, till the plant arrives at a mature state, or the growth of its wood is checked. Rich grounds will produce the *largest* fruit, but poorer soils will produce the *richest* fruit, in all the properties which give it value—the juices will be more concentrated, and the flavor higher. The best wines are made from grapes grown on thin dry soils. The same is the case in regard to the juice and flavor of the apple.

The principle is also illustrated in farm crops. The maize and potato, for instance, whose sap vessels are large, and which may be denominated coarse feeders, are not prejudiced by the strong gases which are given off from stable manure in the first stages of fermentation; indeed those gases constitute the proper pabulum for these crops at midsummer, when they are most abundantly furnished by manure buried in the soil, and when they are most needed to give a vigorous growth to the stalk. These gases are in a great measure exhausted, ere these crops produce their seeds and tubers in autumn, and when they would be prejudicial. Not so with the smaller grains. These produce their seeds at midsummer, when fermentation is at its greatest height; and the gases cause too vigorous, or an unhealthy growth of straw, to the prejudice of the grain. It is for these reasons that we so often insist on the propriety of applying all the manure which a farmer has on hand in the spring, in an unfermented state, exclusively to hoed crops. These crops reduce the manure to a proper state for sustaining small grains and grasses, without diminishing the value of the dung any more for them than would be occasioned by a summer fermentation in the dung yard. We find it to be a general practice in parts of Otsego and Montgomery, where we have lately travelled, to leave all the dung in the yard till autumn, and in too many cases, it is allowed to accumulate for years. Such a practice is the most wretched feature of bad farming. In the first case, the best half of the manure is lost, and the crops which it ought to nourish, and which it would double in product, are consequently light and meagre. Farmers who permit the dung to accumulate about their barns for years, must be either wretchedly indolent, or grossly ignorant: for this dung is to their crops what hay is to their farm-stock—the food destined by nature to nourish and perfect them.

Miscellaneous.

From the Farmers' Register.

ON THE ADVANTAGES TO BE DERIVED FROM THE ESTABLISHMENT OF AN AGRICULTURAL PROFESSORSHIP.

Barboursville, July 23, 1835.

Sir—It has been a settled conviction on my mind for years, that a professorship of agriculture—a pattern farm, and such a paper as yours, united therewith, would be productive of incalculable benefit to the commonwealth. The space of a letter is too confined to admit of one-half being stated. Suffice it to say, it would elevate the science—add dignity to the pursuit—call off from encumbered vocations a portion of the mind of our citizens now lost to the community—present a rallying point for all the scattered information of the land—reduce to the test of experiment every theory plausible enough to justify it—by the same standard to prove the value of every discovery or improvement—promote economy by causing one experiment for many—a certain and rapid communication, through the state, of the results—furnish a sure means of ascertaining the nature of our climate—the quantity of rain falling in the year—the seasons when drought most generally prevails—and by consequence, furnish data to guide the husbandman in the cultivation of crops, both as to time and kind. But I must stop—for I find no end to the advantages that would result from such an establishment. Let me, however, add one more. All these things are to be done before the youth of Virginia—the future men of the commonwealth, destined eventually to influence her destiny. A portion of these, selected from every part of the state (say one to each congressional or senatorial district,) of promise, but unable, from poverty, to educate themselves, to become the adopted children of the state, would be able by alternate labor and study, alike to keep up the farm, and to improve themselves. Indeed, it is worthy of the profoundest consideration, whether every student of the University would not profit by a few hours' work daily, in the proper season. These being my views, I submit to you whether it does not behove the tillers of the earth to make an effort to induce the legislature to attend to their neglected interests. How is this to be done? I answer, as every other sect effects every thing, by conventions—to that alternative we must also resort. What say you to such a convention, to meet in Richmond the first Monday in January? Let any one who feels an interest in the object attend. Let each agricultural society in the state be represented there. If it be asked what good can come of it, the answer is, let us try. A free communion of the intelligence of the land cannot be altogether unproductive of good fruit. Apart from what can be done by such a convention on its own means, an appeal may be made to the legislature under the weighty sanctions of their united wishes, to do something for us. If the view which I suggest is esteemed impracticable, they may incorporate an agricultural society in each congressional district, and award a small sum to each, to be distributed in premiums, after the manner of New-York and other states.

But it is objected that it will cost something. Have we not as a class

offered our fleece annually, without a murmur, to be appropriated to other improvements? Is it unreasonable that in turn we should require a small portion of our own to be applied to our peculiar benefit? A small portion of the interest paid annually to the University, would in a few years put our scheme completely in operation, and I verily believe after that it would be able to support itself. However, all these things might be discussed in convention, and digested in a form that would be most acceptable. And I may be permitted to add, that for once we should have a convention whose sole object would be the good of the country—a spectacle so singular in these times, that it could not fail to be as consolatory as the oasis to the weary traveller of the desert.

If you agree with me on this point, you can greatly promote the object by inviting the meeting in your journal. If I thought my name would be of any service, you would be at liberty to use it with my remarks. But I fear not. However do as you please. I have it much at heart to do something. Better heads than mine may suggest better plans, to which I will most cordially submit.

Accept assurances of my high consideration,

JAMES BARBOUR.

We concur entirely with the foregoing views and recommendations, and shall be pleased to aid them, as has heretofore been attempted, through this journal. We are also clearly of the opinion that nothing in aid of agricultural interests, or agricultural science, is to be expected from our legislature, unless prompted and urged by the expressed wishes of their constituents: and therefore the more ready admission of the necessity, and probable advantages, of consultation among the zealous and intelligent friends of agriculture—either in the mode proposed above, or in some other. There is no individual whose voice is entitled to be heard with more respect on this matter, than our correspondent; but it is desirable that others should also present their views, both as to the objects to be sought, and the mode of seeking them. Though willing to support, and lend our efforts to further any other plan of combining our force that may be found more pleasing to the great number of the agricultural community, we see no reason now to object to the particular plan proposed above, viz: a meeting and free conference of all the members of the agricultural interest in Virginia, who may have enough zeal to join in the effort, for the purpose of determining on what aid of government agriculture most needs, and of asking it respectfully of the legislature. In the mean time the expression of different views on this subject, and discussing the comparative merits of the different ultimate objects in view, will greatly facilitate the operations of such an *agricultural conference*—and we invite to our pages, the expression of opinion of any of those who feel an interest in this important subject.

It is hoped that the several societies will take the proposal into consideration, and give it their support. In whatever manner the meeting may be constituted, there can be no sound objection to the qualifications of any individual as a member. The agricultural interest in Virginia, however overlooked and neglected by the government, is still the *national interest*—and nothing can be derived for its benefit, by the whole or by any portion of those belonging to it, which would not be as beneficial to the commonwealth, as to agriculture. Such a meeting could not do otherwise than honestly labor for the good of the country—because that would be most effectually done by supporting their own. All bodies of men may be trusted implicitly when their private interest is to be promoted by the same measure, that will support that of their country—and none ought to be trusted when these interests are separate and opposed.—*Ed. Reg.*

From the Genesee Farmer.

MANAGEMENT OF THE VINE.

My management of the vine is,

First—to get the most ripe wood: and,

Second—to perfect the ripening of the grape.

1. In order to get the most ripe wood, I, in my summer training, take out all the wood which shows no fruit, and also pinch off all the laterals, taking care to give about one foot space between each shoot, to the top of my trellises, which are about 6½ feet high. I train my vines, (i. e. the Catawba, Fox, Munier, Sweet Water, and White Frontenac and White Chasselas,) fan shaped; and as soon as I find my grapes out of blow, I head down my vines to the top of the trellises, leaving about two buds from the fruit upon each shoot. By this means I get light and air through my vines, which 2d, ripens the fruit much sooner. As the foliage is thinned out, the sap flows more readily to the fruit, and does not evaporate upon the leaves, but is retained in the fruit, which is certainly a benefit. I keep my vines as free as possible from grass and weeds, and loosen the earth around them once or twice a week with a garden hoe, thereby giving the roots all the advantage of a loose soil.

During the dry weather in the latter part of May, I found that the ants had taken possession of several of the roots of my vines, and nearly, before I was aware of it, laid the roots near the surface bare of earth. I soon removed these trespassers by applying a shovel or two full of ashes on the spot infested, and in a few hours they removed, and I have not been troubled with them since.

I am training this year an Isabella vine upon a little different plan. I lead out upon each side of the vine four or five arms, and tie them fast to the trellises, to the length of eighteen or twenty feet, which gives me eight arms from thirty-six to forty long. I thin them as the shoots grow, lead them up to the trellis above, and tie fast. In that way I fill up all the space, say of seven feet high by forty feet long, say 280 square feet, each shoot averaging three clusters of grapes. My vine thus trained, this year will yield me from four to five bushels of ripe fruit.

Rochester, June 27, 1835. A. M. CLARK.

From the New England Farmer.

MERINO SHEEP.

MR. FESSENDEN—Having for many years been a breeder of fine wool sheep, I beg leave to offer you the result of my experience, and if it should not correspond with the observation of other breeders, I can assure them, my flock has never suffered, from want of care and expense in their first purchase, for unwearied attention to their management or for the good condition in which they have uniformly been kept. The sheep were provided with good pasture in summer, and extensive airy sheds in winter, and fed on English hay, with a few potatoes towards spring. The merino sheep imported into this country, from 1803 to 1811, were chiefly of the Spanish Escurial, the Poular, Gaudaloupe, Infantado, Montano, and Nigretti.

The Escurial were beautiful fine wooled sheep, free from grease, *not* carrying a very heavy fleece, or a very strong constitution. The Nigretti were the largest sheep of any imported. The other three flocks were of good size, short legs, round chest and sheared very large and heavy fleeces. My flock was from the Paular and Gaudaloupe, and particularly distinguished for the quantity and quality of their wool, and differs from the others in a looseness of skin on the neck, with a more evident degree of throatiness. Their lambs were generally produced with a coarse, hairy appearance, which was succeeded by a coat of unusual closeness and of excellent quality. Among the great numbers of sheep imported into this country, individuals belonging to the same flocks differ greatly in the size of the carcass, as well as the weight and fineness of the fleece. The great object, at that time in forming my flock, was quantity and quality, for, with the first requisite, I always found the hardiest, strongest constitutions. I endeavored to obtain a fleece that would produce the greatest profit, and so well had I succeeded, that to the time when Saxony sheep were introduced, the entire flock averaged four and a quarter to four and a half pounds of washed wool, and sold at seventy to seventy-five cents per pound. There were no wethers in the flock. Ewes would shear from three and three quarters to four and a quarter pounds. Bucks from six to nine pounds. Yearlings from four to four and a half.

On the importation of Saxony sheep I bought largely, confident I should soon realize in fineness, more than I lost in the diminished quantity of the merino fleeces. But I was sadly disappointed, for I lost not only in the *value* of the fleece, but still more by feebleness of constitution. My merino lambs used to drop in March, and their close hairy coats afforded a protection at once. But I found March was too cold for my delicate, half naked little Saxons. I was obliged to have them drop in May. This was a bad arrangement, for when the lambs were weaned, it was so late in the season, that the mothers would not get fat, as formerly. The merino lambs were so hardy that the loss of *one*, could almost always be traced to some accident or neglect, but the Saxons would die in spite of all my care and attention, full fifteen and twenty per cent. The average weight of my fleeces became very much reduced, and I never sold my clip for over eight cents per pound. Two years ago I became satisfied of my mistake and loss, occasioned by the Saxons, and sold out the whole, reserving to myself such of my old merinos as I could select, that had escaped the general slaughter, and by repurchasing some, I had previously sold, I have now a small flock of merinos with which I shall be satisfied, without further experiments. The ewes, with two exceptions, have lambs by their sides and their fleeces in June averaged four pounds one ounce. Some of the oldest shearing less, and others more, and one reaching five pounds fourteen ounces. One of the bucks sheared eight pounds and one quarter. This wool, washed on the sheep, sold at sixty-seven cents per pound cash.

It is a peculiarity of the merinos, of which I am speaking, that they abound with a greasy secretion, from the skin,—(not stiff hard gum) but an oily substance, which spreads itself through the whole fleece so that the surface assumes a blackish or dark brown appearance and retaining the dust and soil, forms with it a coat that contributes largely to defend the animals from the ill effects of cold and wet. It improves rather than injures the quality of the fleece beneath, and it is easily removed by ordinary brook washing.

The wool is of very uniform fineness, close and compact, and extends quite down to the hoofs and over the face.

In this part of the country there is a general disposition to get rid of the light *fleeced* and light *constitutioned* sheep and replace them by the Spanish merinos, as we formerly had them. Before the return of another season I intend to import from Spain, for the use of my own little flock, (for the benefit of a cross of blood) two merino bucks, that shall possess as far as possible, the great requisite of *quantity* and *quality*. T.

Hartford, Ct. August, 1835.

From the N. Y. Mechanics' Magazine.

MR. BURDEN'S SPIKES.

The public has already had the means of knowing that the above named enterprising individual invented some years since, a machine for mak-

ing spikes of wrought iron, chiefly for the purposes of being used in constructing ships and railroads; but their value, compared with other spikes, seems to be but very sparingly known. These spikes to any competent judge, will show themselves to be far superior to any spikes ever manufactured for the above purposes, for the following reasons. The iron being selected by Mr. B. himself, and in large quantities of the first quality, no other being used, its uniform excellence must infinitely surpass that of common spikes, which are made of such small lots of iron as come to hand promiscuously; the body of these spikes being of exactly even and uniform size, and without hammer strokes, when once entered they have no tendency to split the wood, and, having a square chisel shaped edge, they cut their passage instead of forcing it.

But Mr. B. is emphatically an experimentalist, and he wished to test the comparitive value of his spikes by some precise data. He wished to ascertain first with what degree of safety his spikes might be driven into wood without splitting; second, what was the tenacity of the iron; and third, what power it would require to draw them out.

To test the first point, he took a piece of seasoned white oak joist, 3 by 6 inches, and sawing off 3 inches, produced, of course, a piece 3 inches square and 6 inches long, but with the grain running crosswise. In one end of this block, he entered, without boring, the point of a spike 5 inches long, with the edge of its point across the grain, and drove in the whole length without splitting the block.

To ascertain the second and third points, he drove another and similar spike into a similar block, leaving its head a little distance out, and securing the block in a firm situation, and griping the head by a strong instrument, similar to a pair of wire tongs, he suspended to the tongs 100 56-pound weights, equal to 5600 pounds, and these neither breaking the spike nor drawing it out, he took a sledge and struck forcibly upon the apparatus attached to the head of the spike, when it drew out and left the spike and the wood unbroken.

These experiments were made at the store of Messrs. I. & J. Townsend, in this city, in presence of the President and Directors of the Albany and Schenectady Railroad Company, and if they do not remove all doubts as to the superiority of these spikes for ships and railroads, I know not what would. S. B.

Albany, June 15, 1835.

THE USE OF FRUIT.

As various kinds of fruits are beginning to make their appearance, and as no inconsiderable amount of disease is usually imputed to their agency at this particular season, it may not be inappropriate for physicians to institute some inquiries in relation to their supposed deleterious effects on the health of people of different ages and conditions.

We are familiarly acquainted with the prejudices existing against the free use of our domestic fruits, but very much question whether they have ever operated so unfavorably as is generally believed. It would be quite as philosophical to discard bread stuffs, the various leguminous productions of the garden, and the meats offered in the market, as to interdict the rich fruits which nature has scattered around us. If a careful register were made of all the deaths arising from excess in eating these two species of food, it is quite probable as many would be found attributable to one cause as the other. Eating and drinking have become altogether too artificial; people consult their books oftener to discover how, when, and what sort of a meal should be taken, than to ascertain the state of their finances. Life is thus reduced to an unnatural scale, and the capacity of the stomach measured, as a tide-waiter would guage the dimensions of a hogshead, instead of following the simple indications of hunger, which makes no dangerous mistakes, under ordinary circumstances, in well regulated society. There is a vast difference between gorging beyond the ability of the stomach to relieve itself, and satisfying the cravings of appetite. Were an individual never guilty of any excesses, he would be exempt from the penalty invariably imposed on the breach of any law of the animal economy.

Instead, therefore, of standing in any fear of a generous consumption of ripe fruits, we regard them as positively conducive to health. The very maladies commonly assumed to have their origin in a free use of apples, peaches, cherries, melons, and wild berries, have been quite as prevalent, and equally destructive, in seasons of scarcity. All naturalists will testify to the importance of the fruit seasons to the lower animals, particularly to birds. When there is a failure, or an insufficient supply, the feathered tribes are less musical, less numerous, and commence their migrations much earlier, than when amply supplied with the delicate nutrition designed for them at certain periods of the revolving year.

In the scheme of creative wisdom, the indications are clearly manifested that man is omnivorious; and it was not until muzzled by the opinions of one, perplexed by the ridiculous hypothesis of another, touching the subject of his food, of which he is himself better qualified to judge than the most learned physician in christendom, that he relinquished the faculty of discrimination implanted in his nature, to become the foot ball of those who raise themselves into a short lived notoriety by giving to unfounded theories the character only belonging to well established facts.

There are so many erroneous notions entertained of the bad effects of fruit, that it is quite time a counteracting impression should be promulgated, having its foundation in common sense, and based on the common observations of the intelligent. We have no patience in reading the endless rules to be observed in this particular department of physical comfort. No one, we imagine, ever lived longer or freer from the paroxysm of disease, by discarding the delicious fruits of the lands in which he finds a home. On the contrary they are necessary to the preservation of health, and are therefore caused to make their appearance at the very time when the condition of the body, operated upon by deteriorating causes not always understood, requires their grateful, renovating influence.—*Boston Medical and Surgical Journal.*

TO CORRECT MUSTINESS IN GRAIN.

Corn which is housed without being thoroughly dried, or which is stored in a damp place, acquires a musty smell and taste, which render it unfit for the customary uses; but as this alteration affects only the outer covering, and not the substance of the kernel, it may be easily removed by throwing upon the grain double its weight of boiling water, carefully stirring the mass till the water becomes cold. The spoiled kernels, which swim upon the top, must then be removed, the water poured off, and the grain spread to dry. M. Peschier preferred employing for this purpose boiling water rendered slightly alkaline, and afterwards washing the grain in pure water.

When corn has been heated, or injured in a perceptible manner, the vegeto-animal portion is almost always changed; in this case the farina is not susceptable of a good fermentation, and the bread made from it is unwholesome: such grain is fit only for the manufacture of starch.—*Chaptal.*

COMPARATIVE VALUE OF MANURES.

Report of Competitors for Premium of £20 for the most satisfactory experiment in the application of different sorts of manure.

AIMSFIELD MAINS, Dec. 5, 1834.

Dear Sir—Agreeably to the written intimation which I made to you some time ago, I now beg to state, that in order to ascertain the relative value of Street Dung, Rape Dust mixed with Braised Bones, and Farm-yard Dung, I selected twelve ridges in the middle of a field for the experiment, alloting four of these ridges to each portion. A furrow tile drain separated the lots to which I applied the respective manures, in the following proportions per Scotch acre:

1st. 20 cart loads of street dung, at 5s. 6d		£5	10 0
2d. ½ ton of rape dust, at 110s	£2 15		
3 qrs. bruised bones, at 19s	2 17		
		5	12 0
3d. 16 cart loads of farm-yard dung, at 7s		5	12 0

The whole turnips brairded beautifully, and from the first, till the time of lifting, it was impossible to decide which would be the weightiest crop. I therefore determined, on the last week of November, to take up alternate rows. The tops were taken off, and the result was found to be as follows:

	cwt.	lbs.
1st. Half a Scotch acre manured with street dung, produced of common globe turnip,	301	92
2d. Do. with rape and bone dust,	304	99
3d. Do. farm-yard dung,	312	30

I hope the above will be sufficiently explanatory of the experiments, so far as tried. I am, dear sir, yours faithfully,

JOHN BRODIE.

LINKFIELD, Nov. 15, 1834.

Sir—I hereby send you the weight of four acres of Swedish turnips, grown on the farm of *Linkfield*, crop 1834, after being topt and rooted, the ground manured as follows:

1st. One acre with very fine home-made dung, 12 double cart loads, say 7s. 6d. per cart,	£4 10
Weight of turnips, 27 ton, 14 cwt.	
2d. One acre with Dunbar street dung, 12 double carts, not counting carriage, 7s. 6d	4 10
Weight of turnips, 23 tons, 14 cwt.	
3d. One acre with bone dust, without carriage,	4 10
Weight of turnips, 26 tons, 7 cwt.	
4th. One acre with rape dust, without carriage,	4 10
Weight of turnips, 25 tons, 11 cwt.	

Your laying the above before the Agricultural Society, will much oblige yours truly. JAMES ALLAN.

From the Genesee Farmer.

PROPER TIME FOR CUTTING TIMBER.

Mr. TUCKER—I observe in your paper of the 22d August last, that you are calling the attention of your patrons to the durability of posts, &c. During the last twenty years I have been engaged more or less in the preservation of timber, and from my experience am able to say with confidence, the old opinion of the English writers to the contrary notwithstanding, that the best time to cut timber to ensure its durability, is when

the tree is in its GREATEST VIGOR; and in this latitude, say middle of June—then the sap is in its most fluid state, and entirely escapes through the several pores of the tree. The idea that the sap of a tree recedes to its roots during winter, is in my opinion a mistaken notion The sap is distributed through the tree in winter the same as in summer, and circulation never ceases, except with the life of the tree. The sap in winter is less in quantity and thicker, and owing to its stagnant state, remains in the timber when it is cut in the winter, and become the principle of its destruction. Let timber for rails, posts, or other purposes, be cut when it is in its greatest vigor, (never mind the phase of the moon,) and keep it off the ground until seasoned. In support of my position, I will repeat two instances which have lately come to my knowledge. A farmer of North Carolina wishing to fence a certain lot, went to work according to the old theory, and cut his rail timber during the full of the moon in February; but when he came to make his fence in May he was deficient about 40 pannels: he went into the woods and cut the necessary quantity and put it up as the only alternative; and after some ten or twelve years, his attention being called to the fence, he found the rails cut and split in May infinitely more sound than those cut in February. Another gentleman in New-England had an accident befall a gate post in midsummer, and not having any seasoned timber on hand, sent to the woods for a green one, and expecting that it would only last one or two years, had one cut during the next winter and laid by to supply the place of the green one at his leisure. But during the ensuing summer the other post failed, and the one cut secundem artem, was taken to supply the place of the last failure, and the green post thought no more of until at the end of 7 or 8 years, when the post last put in was found to fail, while the summer cut post was in a perfect state of preservation,

These hints are not prepared with sufficient care for publication, but are only intended as hints for you to reflect upon, &c.

With great respect, yours, JOSHUA HOWARD.

Dearborville, Sep. 3, 1835.

"I owe my success in business chiefly to you," said a stationer to a paper-maker, as they were settling a large account; "but let me ask how a man of your caution came to give credit freely to a beginner with my slender means?" "Because," replied the paper-maker, "at whatever hour in the morning I passed to my business I always observed you without your coat at yours."

There is a world of wisdom in this little anecdote; more good sense and more judicious admonition than are to be found in all the declamation of all the "ten-hour" orators that ever made a speech, or drew up a resolution. Practical mechanics will never grow rich by standing out for limits to working hours, or by any other mode or form of striking for wages.

Few parents realize how much their children may be taught at home by devoting a few minutes to their instruction every day. Let a parent make the experiment with his son of ten years old for a single week, and only during the hours which are spent in school. Let him make a companion of his child—converse with him familiary—put to him questions—answer inquiries—communicate facts, the result of his reading or observation,—awaken his curiosity—explain difficulties,—the meaning of things, and the reason of things—and all this in an easy, playful manner, without seeming to impose a task, and he will himself be astonished at the progress which will be made.—*President Linsley.*

MAMMOTH CHEESE.

We are informed that Col *Thomas S. Meacham*, of Richland, Oswego county, who keeps 154 cows, and has made this season 300 cheese weighing 125 lbs. each, has made one weighing FOURTEEN HUNDRED POUNDS, which he intends to present to the President of the United States. He has also made several, weighing EIGHT HUNDRED POUNDS, each, one of which he intends for the Vice President, one for Gov. Marcy, and one for each of the cities of New-York, Albany, Troy and Rochester.—*Genesee Farmer.*

Young Men's Department.

I send you, Mr. Cultivator, the first of a series of "*Letters from a Father to a Son,*" and intend to send you others, should this be thought worthy a place in your paper, as leisure may permit, or inclination prompt.

PRELIMINARY.

Dear Son—At no time in life do we stand more in need of parental counsels, or are more likely to be benefitted by them, than at the period when we are throwing off the boy, and are about to assume the cares and responsibilities of manhood. Youth are accustomed to look only upon the bright side of the picture; their anticipations are sanguine; their hopes ardent; and they need to be brought often to consider the sober realities of life, to check their unreasonable aspirations. They see not the sands and breakers which begird the ways of life, and upon which very many are early shipwrecked. They need the experienced pilot. Having served in this capacity for a score or two of years, in the school of experience, where all *may* learn though all *do not* learn to profit, and being deeply interested in your future welfare, I propose to make over, for your use, some of the lessons which I have been taught in the school where you are yet but a noviciate. They constitute capital, if put to good use, and will be sure to make good returns, in the multiplied enjoyments of life. These will be given as they occur, without regard to arrangement.

Learn early to depend on yourself. Your physical and intellectual powers must be your main dependence for fame and fortune. The ground has been fitted for the seed. Your hands have been taught to labor; your mind to reflect. You must be the husbandman; you must sow the seed and nurture the plants; and the reward of the harvest will depend upon your personal diligence and good management. If you sow tares, you cannot reap wheat; if you sow idleness you *will* reap poverty; for however abundant the parental bequest, few can retain wealth who have never been accustomed to earn it.

Beware of extremes—the *two* often meet—and by following the one too far, we often insensibly slide into the other. Thus prudence may run into parsimony; patriotism into peculation; self-respect into pride; and temperance in our habits into intemperance in our partialities, prejudices and passions. While you claim and exercise, as the high prerogatives of a freeman, the free expression of your political and religious opinions, and the right of disposing of your time and property in any way, that shall not infringe upon the rights of others, nor compromit the peace and good order of society, forget not to respect the same rights in your neighbor, whom education or association may have imbued with opinions differing from your own. Reform others by your example: for you can never make a sincere proselyte, in religion, politics or morals, or even in the arts of labor, by *coercion.* You may compel men to become hypocrites, sycophants and servile imitators, but you do it at the expense of the best feelings that dignify our nature—at the expense of piety, patriotism and self-respect. Be moderate in all things—in your pleasures as well as in your toils—in your opinions and in your passions. Past experience should teach you, that your opinions may honestly change; and however long you may have cherished wrong ones, or obstinately defended them, to renounce error, when palpable, will reflect lustre upon your character. As it is human to err, so it is magnanimous to confess and renounce one's faults.

Intermeddle not officiously in the affairs of others. Your own concerns will demand all your care. Those who busy themselves with other people's business, seldom do justice to their own. Seek for enjoyments in the domestic circle, and make home agreeable to all around you. This is your duty as well as interest. Seek rather to be good than great; for few *can* be great, though all *may* be good; and count the approbation of your own conscience, above the applause of the multitude. Act in secret as you would in public—as though your motives were scanned by those around you—and you will seldom do wrong. Adieu.

J. BUEL, Esq—Sir.—Permit me to present to your readers a translation of the story of Lucius Quintius Cincinnatus. In order duly to appreciate the history of this man, whose name after the lapse of centuries has reached even this western world, it is necessary to be able to peruse it in the simple but inimitable language of the great Roman Historian. There is in the original description, a beauty and simplicity, which are unrivalled. When Rome was distracted by commotion within, and assailed by hostile bands without—when the army commanded by the consul was besieged even within their camp, and dared not go forth to meet the foe,—when all was confusion and dismay, and destruction seemed to threaten even the city itself, Lucius Quintius Cincinnatus, was appointed dictator by the unanimous voice of the people. The affair as recorded by Livy, is as follows:

"Let those listen to the story of Cincinnatus, who despise every thing when compared with riches, and who deem the poor neither virtuous or honorable. Lucius Quintius, the only hope of the Roman empire in the hour of peril, cultivated four acres of land upon the banks of the Tiber. He was there found by the commissioners despatched for this purpose, while engaged in *ploughing.* Having exchanged salutations, they beseeched him for his own sake, and from his regard for the Republic, to listen to the commands of

the Senate. Amazed, and anxiously inquiring "if all was well," he desires his wife Racilia to bring his gown from the cottage with all possible haste. No sooner had he wiped away the dust and sweat, and thrown around him his garments, than the ambassadors with congratulation, salute him dictator, and invite him to the city, declaring that the army was overwhelmed with terror. In a ship prepared at the public expense, Quintius and his three sons are conveyed to Rome: his relatives and friends, and all the nobles go forth to meet him. Surrounded by an immense multitude, and attended by lictors, he is conducted to his future abode. Having met and overcome the enemy, and restored peace to the city, he resigned the office of dictator at the close of the sixteenth day, although elected for six months, choosing to cultivate his humble farm, and abide in his humble cottage, rather than control the destinies of the Roman people."

Let those who cultivate the soil with their own hands, reflect upon the following facts in the story of Cincinnatus. He was a humble farmer—possessed only *four acres* of land—dwelt in an humble *hut* or cottage—was found by the commissioners actually employed in labor—was covered with dust and sweat, the necessary accompaniments of rural toil; and yet even this man by the unanimous voice of the people, was placed at the head of the Roman empire, with absolute power over the property and lives of his fellows citizens. Having accomplished the object for which he was elected, he most readily and cheerfully resigns his office and retires to the shades of private life. The name of Cincinnatus will never die; while simplicity and virtue remain on earth, it will stand emblazoned in characters that "can be seen and read of all men."

Vernon, June 21, 1835. ONEIDA.

INTERESTING FACTS IN CHEMISTRY.

1. Chemistry is the study of the effects of heat and mixture, with the view of discovering their general and subordinate laws, and of improving the useful arts.—*Black.*

2. Whenever chemical action takes place, a real change is produced in the substance operated upon; and its identity is destroyed. If a little carbonate of lime (powdered chalk,) be put into a glass of water, the chalk will sink to the bottom of the vessel. Though it should be mixed with the water, if left at rest it will soon subside; no chemical action has taken place; therefore the water and the carbonate of lime both remain unaltered. But if a small quantity of diluted sulphuric acid be added to a glass of chalk and water, a violent effervesence will commence the moment they come in contact with each other; a chemical union of the two substances will be the consequence of this chemical action; the identity of each substance will be destroyed, and sulphate of lime, or gypsum (a body very different from either of the substances employed) will be produced.

3. Heat has a tendency to separate the particles of all bodies from each other. Hence nothing is more necessary to effect the decomposition of many bodies than to apply heat, and collect the substances which are separated by that means.

4. It is evident that water exists in the atmosphere in abundance, even in the driest season, and under the clearest sky. There are substances which have the power of absorbing moisture from the air at all times, such as the fixed alkalies, potash and soda, and sulphuric acid, the latter of which will soon absorb more than its own weight of water from the air when exposed to it. Fresh burnt lime absorbs it rapidly; and earth that has been freshly stirred absorbs it in a much greater degree, at night, than that which is crusted and compact. Hence the importance of stirring the soil among tillage crops in time of drought.

5. Bishop Watson found, that even when there had been no rain for a considerable time, and the earth was dried by the parching heat of summer, it still gave out a considerable quantity of water. By inverting a large drinking glass on a close mown grass plat, and collecting the vapor which attached to the inside of the glass, he found that an acre of ground dispersed into the air about 1600 gallons of water in the space of 12 hours, of a summer's day.

6. Lavoisser has explained solidity thus: "The particles of all bodies," says he, "may be considered as subject to the action of two opposite powers, repulsion and attraction, between which they remain in equilibrio. So long as the attractive force remains stronger, the body must continue in a state of *solidity;* but if, on the contrary, heat has so far removed these particles from each other as to place them beyond the sphere of attraction, they lose the cohesion they before had with each other, and the body ceases to be solid."

CHAPTER OF FACTS.—MEASURES OF LENGTH.

Measures in length are the distance of one object from another, in some agreed standard.

A line is the tenth of a digit and the 100th of a foot.

A geometrical pace is 4-4 feet English; and an English mile contains 1200, or 1760 yards, or 5280 feet.

A Scotch mile contains 1500 paces; a German mile 4000; a Swedish and Danish mile 5000; the Russian mile 750 paces.

A hand, used in measuring the height of horses, is 4 inches.

A degree of latitude at the equator, is 69 1-7th English miles.

A surveyor's chain is 4 poles, or 66 feet, divided into 100 links of 7-92 inches. A square chain is 16 poles, and 10 square chains are an acre. 640 acres are a square mile; and 4,840 square yards are an acre. 169-58 yards each way.

The Irish acre 7840 square yards.

The Scotch acre 1.27 English.

A French arpent 8ths of an English acre.

121 Irish acres are equal to 196 English.

48 Scotch acres are equal to 61 English.

11 Irish miles are equal to 14 English.

80 Scotch miles are equal to 91 English.

A sea league is 3.4536 miles, or the 20th of a degree.

6078 feet are a sea mile.

A degree at the Equator is 365,101 feet, or 69.148 miles, or 67 1-7th nearly. In latitude 66.20 Maupertius measured a degree of latitude, in 1737, and made it 69.403; and Swanburgh in 1803, made it 69.292. At the equator in 1744, four astronomers made it 68.732: and Lambton, in lat. 12, 68.743. Mudge, in England, makes it 69.148. Cassina, in France, in 1718 and 1740, made it 69.12, and Biot, 68.769; while a recent measure in Spain, makes it but 68.63, less than at the equator; and contradicts all the others, proving the earth to be a prolate spheroid, which was the opinion of Cassini, Bernouilli, Euler, and others, while it has more generally been regarded as an oblate spheroid.

Degrees of longitude are to each other in length, as the cosines of their latitudes. For every 10° they are as follows:—

Equator,	69.2	50°	44.48
10°	68.15	55	39.69
20	65.27	60	24.6
30	59.93	70	23.67
40	53.1	80	12.02

The pendulum which vibrates seconds, 39.1393 inches at London, is the standard for the British measures. One mile is equal to 1,618.833 such pendulums.

WEIGHTS.

The standard of weights, is, the cubic inch of distilled water, weighing 253.458 Troy grains; the Troy pound 5,760 grains, or 2,281.57 inches. The same standard of 7,000 Troy grains, makes the pound avoirdupois, 277.274 cubic inches; ten of which, or 277.274, being the imperial gallon, or a quart 69.32; and a gill of five ounces of water, equal 8.664.

The American quintal is 100 pounds.

The weight of a cubic inch of distilled water, in a vacuum, is 252.722 grains, and in air, is 252.456 grains.

The Turkish pound is 7,578 grains—the Danish 6,941—the Irish 7,774—the Naples 4,952—the Scotch, pound Troy, 7,620.8.

A cubic foot of loose earth or sand weighs 95 pounds.

A cubic	foot of	common soil	weighs	124	pounds
do	do	strong soil,	do	127	do
do	do	clay,	do	135	do
do	do	mason's work,	do	205	do
do	do	distilled water,	do	62.5	do
do	do	cast iron,	do	450.45	do
do	do	steel,	do	489.8	do
do	do	lead,	do	709.5	do
do	do	platina,	do	1,218.75	do
do	do	copper,	do	486.75	do
do	do	cork,	do	15	do
do	do	tallow,	do	59	do
do	do	oak,	do	73.15	do
do	do	brick,	do	125	do
do	do	air,	do	0.0753	do

THE CULTIVATOR—NOV. 1835.

TO IMPROVE THE SOIL AND THE MIND.

REPORT *of the* COMMITTEE ON FARM IMPLEMENTS, &c.

The Committee examined five THRESHING MACHINES.

1. "*Lane's patent rail-way horse power threshing machine,*" presented by D. Roberts, and manufactured at Waterford, Saratoga county. The proprietor alledges that one horse will thresh 75 bushels of wheat in 8 hours, attended by four men; that when the horse walks 2½ miles per hour, the cylinder. or thresher, revolves 1,200 times per minute. Price of the machine $150. For sale by Charles Down and others, at Waterford. The horse power is on the principle of the endless chain, and the power is imparted to the thresher by means of a band. The four arms of the thresher are cast iron, with wrought iron teeth. The wheel disbands when the motion is obstructed by a stone or other hard body. The horse treads upon iron rollers.

2. "*Shaw's patent threshing machine,*" one horse power—price $75—alledged by the proprietor to thresh 80 bushels of wheat in 8 hours, attended by four men and a boy. The machine occupies 8 by 2½ feet and is moved by straps. The horse moves in a circle. A wheel and strap are affixed to each one of the axes of the threshing cylinder, which equalizes the motion. The cylinder has four arms of wood, and the teeth are secured in them by wood screws—length of the arm 18 inches—supposed to revolve 1,400 times in a minute. Wolverton, Barney and Hart, of Albany, proprietors for the counties of Albany, Schoharie, Saratoga, Rensselaer and Montgomery.

3. "*Pitts' patent horse power, and threshing machine,*" constructed on principles somewhat similar to No. 1—2 horse power. The horses tread abreast upon wood, and the legs are prevented from sagging by a series of what the inventors call "surface rolls." The cost is $125—the fourth of which is for the thresher; will thresh 100 bushels wheat in 8 hours, attended by three men and a boy—4,000 bushels of grain have been threshed without any repairs. This machine is manufactured at Waterford and Buffalo.

2. "*Gleason's patent threshing machine, with Baker's horse power*"—one horse power upon the chain principle—price $150. The horse travels upon wood. Machine is said to have threshed 275 bushels of cats in nine hours, with two horses to relieve each other. The frames of the horse power and machine were of *cast iron*, admirably adapted to combine strength and *lightness!* The first weighing 350, and the latter 180 lbs.—manufactured at Waterford.

5. "*Burrall's new combination threshing machine,*" presented by the inventor, Thos. D. Burrall, who resides at Geneva, Ontario county—price from 35 to 45 dollars, without horse power; of machine and four horse power $125; do. do. two horse power $100. The larger machine requires six hands to attend it, and will thresh 200 bushels wheat in 8 hours; the smaller, with four hands, will thresh 100 bushels in the same time. Cylinder 14 inches in diameter: 2½ feet long, and performs from 1,200 to 1,300 revolutions in a minute. Have threshed from 10 to 20,000 bushels of grain without repair. This machine differs from most machines, in being so contrived as to separate the grain, principally, from the straw, in the process of threshing, as threshers and screens alternate in the bed piece, which may be varied at pleasure; threshes all kinds of grain. As the committee could only *examine* the machines, and saw but the momentary action of the three first named, they cannot safely give opinions as to their absolute or comparative merits; they appeared all to be substantial and useful labor-saving machines, entitled to public notice and patronage.

CORN CULTIVATORS.

1. "*Van Bergen's Corn Cultivator,*" (Coxsackie) presented by C. N. Bement. The sides expandable in parallel lines so as to be adapted to spaces between rows of different breadths, and the shares may be adjusted to turn the earth in or out. A new implement, and apparently a good one, drawn by a horse. Price $15.

2. *Bement's expanding Corn Cultivator.*—C. N. Bement, of Albany, proprietor and inventor. The improvement on the common cultivator consists in a wheel and clevis, by which the depth may be regulated by double pointed shares, and two scarifyers inserted between the shares. Expandible from 18 to 36 inches.—Price $.

The utility of the Cultivator in dressing corn and other hoed crops, in saving a vast amount of manual labor, in almost superseding the hand hoe, and in doing the work better than the plough, in most cases, induces the committee to recommend them to the general notice of our farmers. [See the common corn cultivator figured in the June number of the Cultivator.]

DRILL BARROWS AND CORN PLANTERS.

1. *Bement's Turnip Drill.*—C. N. Bement, of Albany, proprietor.—A hand barrow for drilling turnips—price $8, and an extra cylinder, adopted to sowing peas, mangel wurtzel, &c. for an additional 50 cents. [This is a modification of the drill barrow figured in the June number of the Cultivator.]

2. *Burrall's Corn Planter*—for one horse, arranged to plant corn in hills or drills, at any required distance, and to regulate the quantity of seed. A nose piece levels the ground, a coulter opens the drills, into which the seed passes through a conducter close to the coulter—two teeth cut the little side furrows made by the drill, and throw the mould over the seed—a wheel follows to press the ground upon it,—and a scraper cleans the wheel of dirt. Invented by T. D. Burrall, Geneva.—Price 16 to 18 dollars. This is an ingeniously contrived and useful machine, altogether new to us, and promises to be of great utility, not only in planting corn, peas and beans, but under simple and cheap modifications, in drilling in small grains.

3. *Robbin's Corn Planter and Turnip Drill.*—invented by Mr. Robbins, of Lewis county, and presented by C. N. Bement. It drills six different kinds of grain—has been some time in use, and is highly approved. Price $15.

The drill barrow is of modern introduction among us, and is a valuable labor saving machine, particularly in the cultivation of ruta baga, turnips, mangel wurtzel, &c. The drilling of small grains is much practised in Europe, and with the introduction of these implements, the practice may be found to be advantageous here, as it affords the advantage of keeping the crop free from weeds, and of keeping the surface of the ground loose.—In the turnip culture, which is now fast gaining a footing among us, the drill barrow is almost an indispensible implement.

STRAW CUTTER.

Green's Straw Cutter, presented by C. N. Bement, was the only implement of this kind exhibited. It is a hand crank power. It is 5 feet long by 2½ feet wide. It has 12 knives, 8 inches long, on a 4 inch cylinder, and works upon a cylinder or roller of lead—will deliver two bushels of cut hay per minute—feeds itself, and may be managed by a stout boy. Price, highly finished, $30.—The committee do not hesitate to recommend this as the most complete and perfect implement of the kind which has come under their notice. [Figured in the Oct. number of the Cultivator.]

CLOVER MACHINE.

Burrall's Clover Machine, invented and presented by D. T. Burrall, appears to be a very perfect machine. It may be propelled by a two or four horse or water power, and with the attendance of a man will clean from 16 to 32 quarts of seed in an hour. The current of air created by the motion of the cylinder, with its serrated teeth, is made to perform the winnowing process in the upper half, or simi-circle of the machine—the chaff being thrown off, and the seed falling into a box beneath, while the clover heads or hulls, are whipped out in the lower half. No seed is apparently wasted, and all resisting bodies are readily thrown out without injuring the machine. The proprietor asserts it to be the only machine which separates the seed from the hull *without rubbing, heat or waste, at a single operation.* Price $60.

The highly profitable practice, in improved husbandry, of alternating clover and other grasses with tillage crops, and the consequent increasing demand for seed, renders every improvement in the process of cleaning clover seed a public benefit. The committee recommended this machine, with strong confidence, to the public patronage.

STUMP EXTRACTOR.

Burrall's Stump Extractor, invented by D. T. Burrall, is of cast iron, about two feet square. It is a combination of power afforded by the screw, lever and wheel. Mounted on an axle and wheel, one horse, operating on a ten foot lever, will raise 25 tons. Price $80.

HARROW.

The only one exhibited was a pair of "*Craig's Scotch angled*

Harrows," presented by Mr. Craig, the maker, West Galway, Montgomery county. The wood work is light but strong, contains 40 teeth, each tooth is ¾ inch, square and 10 inches long, of highly tempered Swede's iron. The harrows may be worked together or separate; an excellent implement on all soils—particularly for seeding. Price $15 the pair. [Described and figured in the August No. of the Cultivator.]

SMUT MILL.

Smut Mill and Grain Cleaner—invented by Wm. Battle, Albany, a cast iron cylinder, 2 feet 4 inches diameter, 3 feet high. Mr. Battle being engaged on another committee, no information was obtained of its performance and price.

CHEESE PRESS.

Kibbee's Cheese Press. This press is figured in the May No. of the Cultivator, since which it has undergone material improvements by the inventor, S. Kibbee, Esperance, Schoharie. It is three feet long, 16 inches broad, and 5 feet high. It is a combination of mechanical powers—the force being applied to a short lever—the power of which may be judged from the fact, that a 10 pound weight, at two feet from the fulcrum, causes a pressure of 1,600 pounds, and its power may be carried to any extent by corresponding strength in the main wheel and shaft. The piston decends perpendicularly, and its friction is taken off by a friction roller. Price $15.

This press is admirably adapted, on a commensurate scale, to the pressure of hay, hops, cotton, &c. and to the manufacture of cider.

CHEESE SHELVES.

Wilber's semi-revolving slide cheese shelves, is an admirable contrivance to save labor in the cheese dairy. By it a woman can easily turn 24 heavy cheeses in a minute, and is enabled to rub them without their being lifted from the shelves. The model consists of an upright frame, suspended by an axis passing through its horizontal centre, and into which slide eight pair of shelves, the distance of which may be graduated to the size of the cheeses. The cheeses are placed alternately above and below the axis. Slats are fixed upon the back of the frame to prevent the cheeses falling out when the frame revolves. The frame is made stationary by a pin; and when this is withdrawn, it is made to revolve half round upon its axis, which turns the cheeses; the shelves over them, and upon which the cheeses have lain the preceding day, may then be withdrawn, and left to dry, till the next day, when they may be returned, the turning process repeated, and the other shelves cleaned and dried in turn. The improvement is a valuable one in large dairies. Henry Wilber of Richfield, Otsego county, is the inventor. The price of a single right to construct is $5. [For further description see letter of E. Perkins, in this number of Cultivator.]

Though not coming exactly within their province, the committee cannot but notice, with high commendation, an improved *Bee Hive*, with a swarm of bees in it at work, exhibited by the inventor, Levi H. Parish, of Brighton, Monroe county. Externally it appears as a square box. The two ends and back have doors which open upon hinges, the end ones into the interior of the hive, and the back one covers a large pane of glass through which the condition of the interior, and the operations of the bees, may be observed. There is an upper chamber above these doors, which opens by a lid at the top, and discloses four boxes, nicely adjusted, into which the bees ascend through apertures, from the main hive, and deposite their honey. These boxes may be taken out and returned at pleasure, without destroying or disturbing the bees, and thus the proprietor may be furnished with a constant supply of truly excellent honey without diminishing his stock of bees. The bee moth, it is believed, is less liable to trouble this than ordinary hives. Channels are cut in the under side of the upper lid, leading to an aperture in the edge, to carry off the rarified and vitiated air which is engendered in the hive. The price of a single right to construct these hives is $5.

The committee regret that time and circumstances did not afford them a better opportunity of examining the several machines and implements offered for their inspection, and of testing their utility by a satisfactory trial. Yet they cannot refrain from expressing their strong conviction, that an annual examination of new agricultural machines and implements, by a competent board of scientific and practical men, to be selected and paid by the government, would prove of incalculable advantage. Human labor has been astonishingly abridged in the mechanic and manufacturing arts, by improved machinery and labor saving contrivances—agriculture is also susceptible of being benefitted in like manner; but the incompetency of the farmer to judge of the intrinsic value of an implement at first sight, the frequent imposition of spurious and defective ones upon him, and the difficulty of obtaining correct knowledge of their merits, induces distrust, and prevents the more general introduction of many implements that would be highly valuable. A board of inspectors would stamp a seal upon whatever is of value, determine its relative merits, and give confidence to the purchaser; while on the other hand, the want of the approving certificate, would justly excite distrust, and prevent imposition. This board might make an annual report, which by being promulgated in our 150 journals, would give, to the state at large, interesting and prompt notices of all new inventions calculated to promote the agricultural, and consequently *every* subordinate interest of the state. The committee hesitate not to say, that $1,000 annually appropriated to this object, to be awarded in premiums by a competent board, would add ten times its amount to the products of agricultural labor, and yield a compound interest to the revenue of the state.

J. BUEL, *Chairman.*

SUCCESSION OF CROP.

We gave, in our last, part of a chapter from Low's "Elements of Practical Agriculture," explaining the principles upon which a succession of crops is rendered beneficial to the farmer; and considering the subject of the first importance to profitable husbandry, and as one but imperfectly understood or appreciated among us, we insert in this number, the views which Chaptal has given us in his "Chemistry applied to Agriculture," upon this interesting topic. We cannot quote better authorities. The quotations from Chaptal in this number, are alone worth to the farmer, capable and desirous of improving, three years' subscription of the *Cultivator*, and the price of the volume from which we make them in the bargain.

We have omitted to copy the courses of crops recommended in either work, because many of *their* crops are not cultivated, or but partially so, among us; while maize, one of the staple products of our soil, is neither grown in England or the north of France. The principles or laws which regulate matter apply every where, though the correct practice under these principles may vary in every latitude.

Substitute for Indigo.—A patent has been taken out, in England, and a company formed, for the manufacture of a cheap dye, which answers all the purposes of indigo, and which promises a great saving in this important item of manufacture. It is said to give colors which resist the action of light, air and friction. The new material seems to be similar to Prussian blue, without its objectionable caustic qualities, which are neutralized. With it wool may be dyed in the flock, the fleece, the yarn or skein, or when woven into cloth; and in many respects the substitute is found to be superior, in giving brilliancy and durability to colors, to indigo itself. The principal ingredients, as in Prussian blue, are common potash and blood or animal carbon. For the animal carbon, horns, hoofs, bones, fish, cuttings of leather, old harness, and all other kinds of animal substance, old woollens and the refuse of woollen manufactories, even in a corrupt state, are employed. The fair average price of indigo, in Great Britain, is considered to be 5s. sterl. per lb. and of the substitute 2s. at most, so that the latter is likely to effect, in Great Britain alone, an annual saving of £450,000, (equal to about $2,000,000) with the further advantage, that the gross amount of cost for the substitute would be expended for what is now wasted, and in the labor of its poor inhabitants.

Strawberries.—We find detailed, in the Q. J. of Agriculture, the mode by which London is supplied with Strawberries. It is stated, that within ten miles around London, 1,000 acres are devoted to the culture of this fruit, the product of which is transported to market almost exclusively by women, who carry the baskets upon their heads! The fruit is first put into small pottle baskets, holding about a pint; fifty or sixty of these are placed in a large basket, which is then placed upon a woman's head, on a small cushion, who trudges miles with it to market. The weight of the baskets and fruit is from 30 to 40 lbs. The pottle baskets

are manufactured by women and children; they pass through several hands in the fabrication, and are yet sold at about 6d. per doz. It is stated that the number of women employed, during the season of this fruit, in marketing it in the metropolis, is not less than 2,000.

Mangel Wurzel.—John Schmoldt has published, in the Farmer and Gardener, some facts in regard to this crop, which possess interest to those who cultivate and use it as cattle food. He states—

1. That plucking the leaves, as has been often recommended, for cattle food, before the crop has attained maturity, is always prejudicial to the growth of the roots. Here experiments have confirmed what reason would dictate, that nature furnishes no more leaves than what are necessary for the plant. A square rod, where the leaves had been plucked, gave 117½ lbs roots; and an adjoining square rod, on which the leaves had been left, gave 157 lbs. Other experiments gave similar results.

2. That a greater product is afforded when the plants are two feet apart than when they are one foot.

That at 1 foot each way a square rod gave,..... 192 lbs.
That at 1½ feet each way a square rod gave,..... 235 lbs.
That at 2 feet each way a square rod gave,..... 305 lbs.

This is owing to the roots growing larger at the greater distance. Here Chaptal's remark occurs to us, that small beet roots contain double the per cent of sugar, and consequently of nutritious matter, that very large roots do. And this reminds us too of a very dissimilar fact in regard to ruta baga, viz., that the larger the roots of these the more they abound in nutriment.

3. That it is difficult to preserve the roots during the winter. A little frost destroys them, and if in large masses, or in a damp or warm situation, they are subject to grow, or to spoil.

4. That 45 lbs. mangel wurzel roots is equivalent, in nourishing properties, to 10 lbs. hay, and that consequently it is necessary to give daily 100 to 150 lbs. to fatten a bullock. The ruta baga, mangel wurzel and potato yield about the like nutriment to cattle. We have fed oxen two bushels a day, of the former, each for three months, with a little hay, and had them fatten well; and some Scotch feeders have gone as high as four bushels a day to a fattening ox.

5. That the mangel wurzel is liable to produce a surfeit, and to impair the digestive organs, if given in too great quantities, or continued for a long time. Hence hay, or straw, or other roots should be given with them.

The foregoing facts are not given to discourage the culture, but to remove error.

On a recent visit to a friend in Hartford, Conn. we had ocular demonstration of *the influence of the stock upon fruit*. Our friend had in his garden a pear tree bearing large summer fruit, which ere it was ripe became rotten at the core. The fruit being consequently worthless, he engrafted the St. Germain pear upon several of the side shoots, and the Vergalue upon the top. The effect has been, to enlarge the fruits last grafted, and to accelerate their ripening at least a month. The St. Germain, of which we took several, are of double the size of those grown on the tree from which the grafts were taken; the Vergalue is somewhat increased in size, though deteriorated in quality, and one of the fruits which we ate showed a partial rottenness at the core. The effect of growing butter, or melting pears, on the quince, a practice general in France, is to impart more solidity to the flesh. These facts may become important, as they seem to suggest a new means of crossing fruits, by which the maturity of those that ripen too late for a northern climate may be accelerated; and those which ripen too early for winter use, may be retarded in their maturity. The grape affords a good subject for experiment; and the Isabella, Catawba and Blands, may thus be brought to ripen their crops with more certainty, and in greater perfection among us.

The Peach.—A new method of propagating, and of preserving from the worm, this valuable tree, is published in the last *Farmer and Gardener*, by an Alabama correspondent. He makes 12 inch cuttings of the *water sprouts*, and inserts them 9 inches in well dug mould, between the middle of Nov. and 1st Feb. They mostly live and do well; and after four years trial, he declares, that not one of the many trees propagated in this way has been affected by the peach worm, although his other trees have been seriously injured by them. He sows early peas in his peach orchard, which his pigs consume upon the ground—keeps three feet of surface about his trees loose and clean with a hoe, and puts a shovel full of leached ashes about each in the spring.

The statistics of the *Coal Trade* in Great Britain will astonish those who do not appreciate its extent. The annual consumption of coal is stated at 12,000,000 chaldrons. Of this quantity three and a half millions of chaldrons are used in manufactories, chiefly to propel machinery, as a substitute for water power,—an expense we are likely to avoid from the extent of our hydraulic power. 1,400 ships and 15,000 seaman are employed in the transportation, and 21,000 at the mines, upon the rivers Tyne and Wear alone. The coal fields of Durham and Northumberland are estimated at 837 square miles. Of these only 79 miles have been excavated. The residue is estimated to furnish 6,046,320,000 tons a year for 1727 years. But for her coal mines, the expense of fuel would form a serious drawback upon the profits of British industry. These facts should admonish the west, the *far west*, to be provident of its fuel.

The Silk business.—Since the commencement of two or three periodicals specially devoted to the silk business, we have avoided publishing much on this subject, from a wish not to conflict with the interests of the proprietors of those papers. But the inquiries and requests on this subject have so multiplied, that we propose to give, before the opening of another season, concise directions for the management of the whole business, from the planting of the seed of the mulberry to the completion of the cocoon.

The importance of canals and good roads, and the value of manures to agricultural prosperity, are strikingly illustrated in the following incident related by Chaptal.

"During a tour which I made with Bonaparte in Belgium," says he, "I heard him express to one of the council of a department, his surprise at the vast extent of waste land over which he had just travelled: he was answered thus: 'Give us a canal to transport our manures, aud to convey away our produce, and in five years this sterile country will be covered with crops.' The canal was constructed and the promise realized in less than the required time."

Rheumatism.—A highly respectable correspondent in Massachusetts has requested us, from motives of philanthrophy, to publish the following recipe for curing the rheumatism, the efficacy of which he has witnessed. We can only repeat to the afflicted his words—"*Try it*"—we do not think it can do harm, and it may do good.

"Take one gill of alcohol and one gill of spirits of turpentine—mix them in a bottle and add one ounce of camphor. Apply this compound by rubbing thoroughly with a piece of flannel the part affected, three nights in succession—then omit three—and so on till a cure is effected. It is a powerful medicine, and if it should affect the stomach, take a small quantity of brandy, ginger tea, or something of a like exciting nature."

The complete Farmer, and Rural Economist.—Mr. Fessenden, the compiler, has presented us with a copy of the second edition of this work, which has been revised, improved and enlarged. This is rather a compilation than an original work; but it is a compilation peculiarly adapted to the wants of the American farmer—containing the pith and marrow of what is most important to success in his business. We do not think a greater quantity of valuable instruction to the practical farmer, can be found combined in so small a space, or purchased at so low a price, as is offered in this volume. It is a duodecimo volume, of 370 pages, from the press of Russel, Odiorne & Co. Boston—price one dollar. We commend it to our patrons.

PARKER'S FARM GATE.

We are induced to give a cut and description of this gate, and to commend it to the public, from a conviction, that if not the best, it is *one* of the best that we have ever seen. We saw it first figured and described in the American Farmer, and about sixteen years ago had a dozen of them made. They have been in use to this day, save one, some of the tenons of which have rot-

ted. The expense of repairs has been virtually nothing, and they have always remained in order. We think we estimated their cost, when made, at about $3 each, perhaps exclusive of the iron work. The timber, which is white oak, was sawed at the mill to pattern. The principle trouble has arisen from the fastening posts having been put down without anchors; they were raised by the frost, and required in the spring a new adjustment of the ketch. Both the hanging and fastening posts should have anchors, that is, a stout piece framed on the bottom, with two braces extending from it to the post near the surface of the ground; and the former should also have a second anchor at a right angle with the first, at least on the side to which the gate is to open, thus ⊤. We have adopted a different fastening from the one figured, the model of which was obligingly sent to us by Dr. Hosack.—See Fig. x.*

The advantages of these over ordinary gates are—

1. They are very light, and yet strong, and the principle weight is thrown upon the heel.
2. They are easily opened, even by a child, and will readily shut and fasted themselves. They never drag, if hung properly.
3. They cannot be opened by an unruly animal.
4. They are not liable to get out of repair.
5. In the *long run* they are cheap: For who that has counted the cost does not know, that an ordinary gate, or rails or boards as a substitute, cost as much or more, in the course of 15 or 20 years—to say nothing of the damage occasioned by their being half of the time out of order. And
6. They are durable—the wood, if good and well painted, lasting 20 or 30 years, and the irons, which constitute the principal expense, an age, or a century.

Subjoined is a description of the gate, in which reference is had to the cuts.

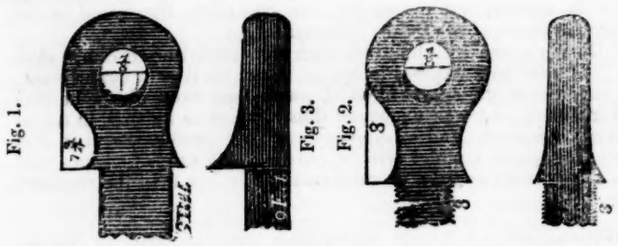


Fig. 1—Is the upper thimble adapted for a gate opening one way; with an iron strap which is to fasten with screws along the top of the gate, made to extend the whole length of the gate, and finish with a round screw nut let into the fore part of the head of the gate as at Fig. 5; the thimble being bent 1-4 of an inch bearing towards the hanging-post.

Fig. 2—Is the lower thimble of a gate proportioned to the upper thimble, Fig. 1, as 1 3-4 inch is to 3 inches, in regard to the distance between their centres and shoulders respectively. These thimbles are adapted for a gate whose hinges are 40 inches asunder; and as 40 is to 1 1-4, the difference in this instance, so should be any other distance from hinge to hinge to the proportionate difference or extra length of the lower thimble; and the greater the extra length might be made, over and above such proportion, the greater must become the velocity of the gate's fall, or tendency towards the line of rest, until its course is arrested by the fastening-post 1-16th part of the circle, or 22 deg. 30 min. short of the line of rest. The lower thimble is let into the gate by a screw of equal substance throughout its length, or not tapered, in order that the adjustment of the thimbles as to the velocity of the gate's fall, may be regulated to so great a nicety as half a turn of the screw: and the thimble may either be let into the heel of the gate, or lengthened out by a washer, as occasion shall require. The position of the thimbles, in respect to each other, must be favored also by the lower thimble, which being placed 1-4 of an inch out of the middle of the heel of the gate, in the contrary direction of the upper thimble, the whole difference, as to the distances of the two thimbles from the hanging-ing post, will be 1-2 an inch; and their vertical plane, which is the same as that of the lines of rest and equilibrium, will form an angle with the line of fastening of 22 deg. 30 min. or 1-10th part of a circle; this adjustment, in effect, adds 1-12th of an inch to the extra length of the lower thimble, so that, by a plumb-line, it will be found (when the gate is hung upright, as it always ought to be) that the actual extra length of the lower thimble, or horizontal distance of the two centres from each other, will be 1 1-4X1-9=1 1-3 inch.

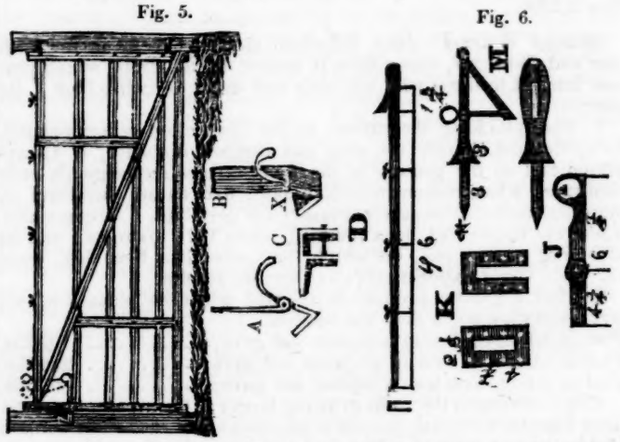
Fig. 3—Represents the side view of Fig. 1.

Fig. 4—Gives the side view of Fig. 2.

Fig. 5—Is a complete gate for opening one way, and constructed in such a manner, that it shall not sink at the head, as ordinary gates are apt to do. The bars are let into the middle parts of the head and heel, and the braces are tapered for finishing upon a level surface with the heel, heap, and rail; as is evident in the following directions for the sawing out the timber, which should be of kind oak, not too tough, and entirely free from sap.

Fig. X. A. and B present front and side views of the jointed ketch, which is nailed or screwed upon the shutting post, in which a box of about 5 inches long and 4 deep is made for the play of the ketch. C is fastened upon the head of the gate, by the bolt and screw shown in the cut, so as to fit the ketch. The thumb-piece is attached to the lower joint of the ketch, and when pressed upon, the gate readily opens.

Fig. 5. Fig. 6.



The waste in planing and finishing a gate may be allowed for or not, as the gate is desired to be a little more or less strong: but when the timber is good, it is reduced so little by being planed and finished into a gate, that no allowance need be made for the waste; or, at all events, if the sawer attends to the dimensions recommended, the gate will be quite strong enough for its size.

Directions for sawing the Timber for the Gate.

	Length.	Greatest thickness.		Tapered to the head.		Solid contents.
	f. in.	*in. by in.*		*in. by in.*		*cubic in.*
Heel,.....	4 4	4½	3½	..	..	= 832
Head, ...	4 4	2½	2½	..	..	= 325
Rail, ...	9 0	3½	3½	2½	2½	= 972
5 Bars each,.....	9 0	3½	1	2½	¾	= 1417½
Diagonal Brace,.....	9 6	3½	1½	2½	1	= 427½
Larger upright brace,.....	2 3	3 1-4	1 1-4	..	..	} = 250
Smaller do.	2 8	3	1 1-4	..	..	
						4224

which will be found to form a well proportioned gate, the whole of the eight parts at the head presenting to the eye 2½ inches; and seven out of the eight parts at the heel, that is, all excepting the heel itself, present 3½ inches. Its solid contents of timber is 4224 cubic inches=2 feet 5⅛ inches, or nearly 2½ cubic feet.

The diagonal brace is fitted into the heel by a strong butment, even with the lowest bar, and its smaller end meets the upper angle at the head, and is confined laterally by two upright braces; which would keep up the rail, provided the head were not pushed forward; and that is prevented by an iron strap of equal length to the gate, being attached to, or forming a part of the upper thimble in the first instances, where it holds the heel of the gate by the shoulder of the thimble: it is afterwards screwed to the rail at proper distances; and, lastly, secures the whole work together by a screw nut, rounded and let into the front of the gate's head.

The fastening is remarkably easy for a horseman to open, and as difficult, if not impossible, to be opened by cattle; the upright wire of the latch is furnished with a guard, and the mortise of the head of the gate through which the latch passes is finished with sheet iron escutcheons, like those at K, the fastening being completed with the catch M, having a button in the place of the ring.

If it were wished to make a larger gate of this pattern, let the above column of lengths be altered accordingly; but the column of greatest thickness, and that of the sizes to which the parts are to be tapered, may remain as they are: suppose the gate is to be 9½ or 10 feet long, instead of 9 feet, then add about half of what the length of the gate is increased to the lengths of the head and heel, with as much as is wanting to the braces, and the gate will be in a good form, the rails and bars being of course cut out to the new length.

Those numbers in the table denoting the distance of hinges, which are marked with an asterisk, are precisely proportioned to the horizontal distance of the lines falling from the hooks, for as 40 : 1¼ : : 32 : 1, &c. and the intermediate numbers are nearly enough calculated, but as 40 : 1¼ : : 41 : 1, and a further fraction, 42 to a still greater sum, but not amounting to 1-12 inch difference till the distance of the hinges becomes 43 inches: and the same will apply to other parts of the table.

Take any other distance of the hinges from each other, and the required extra length of the lower thimble may be found, by placing the numbers 110 and 6 7-8 as the first and second terms of a rule of three proportion, and the new distance of the hinges must be the third term: the answer divided by two will be the sought for horizontal distance of the two perpendicular lines falling from the hooks: and as the extra length of the lower thimble should always be the same as the horizontal distance of the perpendicular lines falling from the hooks, [adding the loss in hanging the gate] the answer for the one is the measure for the other.

When the hinges of gates are more or less than 40 inches asunder, the new position of the hooks may be found by the following TABLE :

11 12 13 14 15 16* 17 18 19 20 21 22 23 24* 25 26 27 28 29	1-3 5-12 7-12 2-3 3 5-6	Distance of the two hinges or pivots of a gate's suspension. Horizontal distance of two perpendicular lines, one falling from the centre of each of the hooks.
30 31 32 33 34 35 36 37 38 39 40* 41 42 43 44 45 46 47	11-12 1 1 1-12 1 1-6 1 1-4 1 1-3 1 5-12	Distance of the two hinges or pivots of a gate's suspension. Horizontal distance of two perpendicular lines, one falling from the centre of each of the hooks.
49 50 51 52 53 54 55 56* 57 58 59 60 61 62 63 64 2	1-4 1 7-12 1 2-3 1-3 1 5-6 1 11-12	Distance of the two hinges or pivots of a gate's suspension. Horizontal distance of two perpendicular lines, one falling from the centre of each of the hooks.

* The iron strap is about an inch by a quarter of an inch in substance, for one half of its length, when it is tapered towards the head of the gate. At the end nearest to the thimble, it is made stronger for a few inches; and close to the shoulder of the thimber, it should be about an half inch square: the edges are chamfered off, and the whole appears to be gradually tapered from the heel to the head of the gate, widening a little round the whole which is left for the upright part of the latch adjoining to the handle.

FLORICULTURE.

In accordance with the wishes of some of our correspondents, we intend to devote an occasional column to FLORICULTURE, for the special benefit of our female readers, and to diffuse a taste for rural embellishment, sufficient to instruct beginners in the selection and management of the best ornamental garden shrubs and flowers.

"What are all these things good for?" was the cynical interrogatory of one who valued every thing according to what it would sell for in market, on being shown into a pretty flower garden. "They are some of the handy works of our Creator, who gives us nothing in vain," was the reply: "these are kindly bestowed upon man for the innocent, but high gratification, of his intellectual faculties—faculties which distinguish him from the brute." "Grains," said the great Newton, "are God's bounties—flowers his smiles." Those who can be grateful for the *bounties*, cannot be indifferent to the *smiles*.

The advanced state of the season leaves little to be done in the flower garden, except planting bulbous and perennial roots and shrubs, and securing those that are tender.

Of *bulbous roots*, the tulip, hyacinth, daffodil, crocus, and crown imperial are deemed hardy, and highly ornamental.

The varieties of the *tulip* and *hyacinth* are innumerable, and vary in price according to quality. Good ones are sold at $1 per doz. They flower in May, and increase by offsets. The soil should be dry, and well prepared, for them. They may be planted 3 or 4 inches deep, and 6 inches apart either in beds or upon borders. The tulip does best when the bulb is surrounded by a sprinkling of coarse sand. It should be taken up at least once in two years, to separate the offsets. Although deemed hardy, a covering of litter, or tan, is servicable to these bulbs during the winter.

The *crocus* is among the earliest vernal flowers. Plant 2 inches deep, and from 2 to 4 apart. The blossoms are of various colours, and frail, but coming in April, and sometimes in March, are very desirable.

The *crown imperial* may be planted 6 inches deep, in a rich soil, and 8 to 10 inches apart. They are perfectly hardy. Several varieties.

Most of the varieties of the *narcissus* and *jonquil* require some protection during winter. They may be planted like the tulip. They flower in April and May.

Of other perennial hardy flowering plants, there are many that are very ornamental. These require no other care than to be kept free from weeds, and to have the ground dug around them in the spring.

Of *peonies*, the Chinese are preferred for beauty and fragrance, the double white and rose scented in particular, though the common crimson is quite ornamental. They cost from 50 cents to one dollar.

The most ornamental of the *lilies* are the white, tyger, Chinese white day, and the common pendant lily of our meadows, which latter improves under cultivation.

It is yet in season to plant shrubs and creepers. The *mazereon* is the earliest to flower, and is very pretty. The *lilacs* and *seringoes*, of which there are several varieties, and the *snowball*, or Guelder rose, soon follow in bloom. There are several climbing *honeysuckles*, which are ornamental upon arbors and about dwellings. The fragrant monthly, yellow monthly and scarlet trumpet are a good selection; and the upright Siberian and Tartarian are no less ornamental when in bloom. The *Pyrus Japonica*, scarlet and white, are dwarf, hardy shrubs, the former is covered with brilliant scarlet, and the latter with white flowers, early in the spring.

The *rose* in its varieties, displays all the desirable colours, and many hundreds of them are hardy, and several of them climbing.

We have only referred to a few of the hardy ornamental shrubs and plants which are for sale at the nurseries. Indeed our woods and fields abound with flowering plants which are highly ornamental, and which improve under culture.

The roots of tender perennials, as the *tyger-flower*, *tuberose*, *ferraria* and *Dahlia*, if not already done, should be taken up, well dried, and secured for the winter. The first three may be tied in bunches, and hung up where they will be secure from frost. The Dahlia must be preserved from too much moisture as well as from frost. They may be put in a box with dry sand, and placed in the kitchen or *dry* cellar. Seeds of annuals and perennials are best preserved in their capsules or seed vessels. They should be kept dry.

CORRESPONDENCE.

SHEEP HUSBANDRY, No. 1.

SIR—Having noticed in some of the late periodicals, some communications on sheep and sheep husbandry, which appear to me to contain some misapprehension; and having noticed your solicitation in the Cultivator, for contributions, of information on sheep and their management, I submit the following remarks :

Independent of the consideration that the productions of the soil furnish sustenance for man and beast, agriculture is advanced from this basis to an exalted summit. During a long period of human history, ethics and physics were shrouded in mystery, and wrapped in unintelligible and boastful phraseology. But the book of nature has always presented an open page to the discerning and unprejudiced eye.

Agriculture and husbandry justly sustain a pre-eminence over other pursuits, in that, he who cultivates an acre of ground to most profit, or who rears the best domestic animal, does not hesitate to disclose all the means by which that object was attained.

That an animal which furnishes us with warm and elegant clothing, with delicious and wholesome food, and light to prosecute our noctural pursuits, is worthy of the fostering care of our government, and the assiduous attention of intelligent individuals, will I think be readily admitted.

I have been interested, and to a limited extent, personally engaged in the cultivation of fine wooled sheep, from a less to a greater number, for 22 years past.

An acquaintance with the character of the sheep is a science; the proper and profitable management of sheep, is a great art—I think next, if not equal to manufacturing prime cheese,—requiring great skill and unremitting vigilance.

In what way the fine woolled sheep of Spain originated, whether produced in that country, or procured from some other, has not yet been decided by naturalists.

Whether they are a distinct race of sheep, or whether the fineness of their fleece is dependent on climate and cultivation, any more than the peculiarities subsisting between the European and the African, is yet left for scientific investigation.

But it is a fact generally known, that Spain has until within a few years furnished about all the fine wool manufactured in Europe, and that she was so tenacious of preserving this monopoly, as to enact severe penal laws against the exportation of Spanish sheep from that country.

It was only by royal munificence and favoritism in two instances that any sheep were carried out of that country. The first a present to the Elector of Saxony, at the beginning of the eighteenth century. The second to the King of France, now constituting the celebrated Rambouilet flock.

That a present of this description to the Elector of Saxony, in the face of all Europe, should be so appreciated as to elicit sovereign care is obvious. They were styled the Electoral flock, the most intelligent shepherds procured, and they were cultivated with unremitting attention. This flock, by great care and selection of bucks, has established and maintained its pre-eminence. The numerous private flocks of the nobles and gentry of Saxony, under various denominations, are derived from the increase and culling of the electoral.

The Arabians have advanced the noble horse to a degree of excellence beyond rivalry. The Saxons, proceeding on the same principles, have advanced the domestic animal next in importance to an exaltation that ought to make the inexperienced and uninformed pause, before they reject the results of the interesting and intelligent operations of a century. I lay it down as an axiom, that so much of human operation as is based on scientific principles must necessarily stand.

The improvement of the Spanish sheep to that of Saxony was effected, and has been preserved entirely, by a scrupulous attention to purity of blood and the most discriminating selection of bucks. A superior Saxony buck is now worth in that country four times what he would bring in this. The traffic of the world has become too well disciplined to warrant the

expectation of high pay in the market for a worthless article; Saxony wool yet maintains the highest quotations.

The first Saxony sheep imported into the United States were sold at auction three miles from my former residence, at which I was a purchaser. The novelty of the consideration that a new kind of sheep far surpassing the Merino, which in preceding estimation had been considered the ultimatum of excellence; and so recently sold in this country of such extragant prices, in one instance of a buck sold in Philadelphia for $1400 and an ewe for $1000, at once excited the highest sheep frenzy, and assembled at the sale all those who had imbibed a particle of taste and interest in sheep culture. The recollection of the characteristic distinctions which others and myself at that time made between Saxony and Merino is now truly ludicrous. For we were entirely in the dark as to the facts above narrated, and we were proceeding on the information that Saxony washed wool sold for $2 per lb. And yet strange as it may appear to some, I have seen one sample of Saxony staple and washed wool sent to this country, which, to a scientific manufacturer, furnished with the requisite machinery, would, at the price cloth at this day brings in our market, be worth $2 per lb.

From the preceding narrative it is plain, that the Saxony sheep imported into this country were from a variety of flocks of which the electoral was the parent.

Of the sheep introduced into this country from *Saxony*, four flocks might be admitted to be called *Saxony* sheep; of these one half might be denominated *prime*,—these sheep were generally labelled, but the best were branded either with a cross or a crown. I saw two entire flocks sold, which were brought as a return cargo, the captain being master and factor, which would disgrace any country whose name should be associated with pure blood and fine wool. These sheep were purchased by speculators and sold through the country at high prices as *Saxony sheep*, from which as one source has originated the misapprehensions and discordant opinions of our best wool growers.

It was not until the distracted and disorganized state of the Spanish government, arising out of faction and French invasion, that some American gentlemen were able to transport some Merino sheep to this country. The first importation of Spanish sheep came distempered with foot rot, itch, and a long train of ails, whether owing to transportation and confinement or derived from their home flocks, I am unable to say. But such was their crippled and forlorn condition as to excite a long enduring prejudice against their introduction and cultivation, far exceeding any thing pertaining to *Saxony* sheep.

This indiscriminate application of the term Merino, and some recent recommendations of old fashioned Merino sheep and crossing with Bakewell, impose the necessity of going into the history of the Spanish flocks, which will be reserved for a future paper. F.

SAXONY SHEEP.

J. Buel, Esq.—Sir—In your last number, by my own, or a typographical error, I am made to say that Mr. Hamilton Rogers' flock of full blooded Saxon ewes sheared 3 lb. 9 oz. a head, making at 80 cents per pound, $2.85 to the fleece. It should have read 2 lb. 9 oz., making at 80 cents, $2.05 to the fleece. The account then stands thus:—

Mr. Grove's Saxon fleeces,	$2 40
Mr. Rogers' do (young sheep)	2 05
My own,	2 56
Average of Southdown fleeces,	$2 12
Average of Bakewell do	1 98
Difference between two highest,	$0 44

Cortland Village, Oct. 20, 1835. H. S. R.

Maple Grove, Oct. 4, 1835.

Mr. Buel—Sir—The weakness of my eyes has of late made it difficult for me to give even the necessary attention to my private correspondence, or I should have earlier noticed your extracts from Mr. Grove's reply to R.; so far at least as to have corrected its errors and supplied its omissions; for it will certainly puzzle any of your readers to make 2¾ lb. of Saxon wool at 80 cents, amount to $2,40, and I think they will be at a loss to account for the exclusion of our old friends the Merinos from this comparative estimate of the value of wools predicated, he says, on the price current for New-York, as published in the Cultivator for May.

However, leaving all this for Mr. Grove's explanation, let us take his own data, and from it, make a *corrected* calculation, and we shall arrive at results that will place the Saxon pretensions to superior value in fleece where they belong.

Merinos averaging 4 lb. of wool, at 60 cents, would yield	$2 40
Bakewell averaging 7 lb. of wool, at 33 cents, would yield	2 31
Saxons averaging 2¾ lb. of wool, at 80 cents, would yield	2 20
South Downs, averaging 4 lbs. of wool, at 53 cents, would yield	2 12

Thus we find by Mr. Grove's *own scale of valuation*, that the Saxons, with the exception of the South Downs, yields the least valuable fleece of the whole!! As to their *relative* grade of merits in constitution, early maturity, and size, nothing need be said.

But the fact is, that my merino flocks, of which, *five-sixths* are *ewes*, yielded this year an average of 4½ lbs. of well washed wool—still in my possession, for the inspection of those who may wish to examine it. Now let us compare them with Mr. Grove's *selected* flock of Saxons—not a "speculative breed of Saxon sheep," but a flock selected by one, than whom, it has been said, there is not in America "a more *exact*, skilful, and, for his age, experienced shepherd"—a flock chosen on the spot by one "brought up from childhood in the care of the best flocks of Germany." The advocates for Saxon wool could not desire a more advantageous selection for their cause. Now let us see the result.

R.'s merino flock averaged 4½ lb. at 60 cents	$2 70
Mr. Grove's Saxons, estimated at 2¾ lb. at 80 cents	2 20
Leaving a balance in favor of the merinos, of	$0 50

If any question should arise in Mr. Grove's mind, as to the *average* stated—the wool is still in my possession—if any doubt as to its *estimated value*, I can only say, that a friend of his, a near neighbor and a breeder of Saxon sheep, and who was also a large purchaser of wools, did me the favor of a visit; and on examinging the fleeces informed me that he considered the wool worth 60 cents.

If I am not mistaken, the Cultivator has repeatedly called the attention of its readers to the important subject of sheep-husbandry; I therefore presumed its columns were open to a free discussion of the subject, provided all personality was avoided; if so, may I ask of you to give place to an article that appeared sometime since on Merino and Saxon sheep, in the August number of the New-England Farmer, signed T, published in our last number—as it appears to be written by a practical man, well acquainted with both varieties of sheep. R.

SKINLESS OATS--INCREASE 28 FOLD.

J. Buel Esq.—Sir—In communicating the produce and cultivation of skinless oats raised by E. Holbrook, Esq. I beg you will not think me arrogant, or having any pretensions to great agricultural skill—our motive simply is, that we hope some experienced agriculturist will (through that truly valuable agricultural publication, the *Cultivator*,) communicate the result of their experience in the cultivation of the skinless oat. Mr. Holbrook procured four quarts of skinless oats, which I sowed broad-cast. The crop gathered and taken to the barn, was threshed, cleaned and measured: the product is three bushels and a half—the bushels weighing forty-four pounds. In consequence of a miscarriage when the oats were forwarded, they were not received until the 19th of May, when they were immediately sowed. The land appointed and prepared to receive them, was joining a timothy-field; the consequence was, when the timothy was mown down, an innumerable host of grasshoppers took possession of the oats, and commenced their usual destructive havoc, which prevented a much greater yield.

Preparation of the soil.—A piece of land from which a large crop of ruta baga was taken last November. As soon as the turnips were taken from the field, we run the plough up and down the furrows, (the turnips being cultivated upon the four furrow system.) The land remained in this state during winter, receiving all the benefits of the frost without exposing the soil to heavy rains &c. In March, the ridges with a plough, were struck down and harrowed; when ready for sowing, they were formed into eight step lands, ploughed deep, and sowed. I must remark, in consequence of the protracted sowing, I formed a composition of sheep manure, ashes, plaster, &c. &c. with which we gave a top dressing to expedite their growth, selecting a proper period according to our judgment, for the application: although we received scarcely any rain from the time of sowing, to the time of harvesting, they continued to grow luxuriantly. It may be well to remark, this mode of cultivation is not applicable to all soils, particularly sandy land. Yours with great respect,

THOS. MIDFORD.

Hyde-Park, Oct. 15, 1835.

EXPERIMENT ON FEEDING CALVES.

J. Buel, Esq.—Sir—If nothing of more importance is on hand to fill a column in your useful Cultivator, the following is at your service, to dispose of as you see fit.

As it is difficult to speak of one's own concerns without egotism, I hope that fault will be pardoned.

Long and careful observation has convinced me, that cows give more milk through the season, to take their calves from them the first or second week. Calves with kind treatment, will usually in two or three days, learn so as readily to drink the milk when presented to them, but they require about one-fifth more milk when fed to them; probably the saliva they swallow in sponging the milk from the teat may account for the difference, but they learn to feed on grass or fodder younger, and their food may more gradually be changed from milk to other feed, than can conveniently be done with a suckling.

Calves suddenly taken from a liberal supply of milk, to grass, are frequently affected with a diarrhœa that sometimes proves fatal.

I must acknowledge that I have been prejudiced against making any substitute for milk for the first ten or twelve weeks, with any expectation

of raising a thrifty animal, till last year, 1834, I had two heifer calves dropped the 4th May: anxious to raise them, altho' of our common breed, but their dams were excellent milkers, I determined to try to raise them on whey. When they were 4 weeks old, I began to mix whey and a small quantity of shorts of wheat with their milk, and gradually lessened the quantity of milk, till they were 5 weeks old, and stopped the milk and fed them whey three times a day, and at morning and evening mixed a single handful of shorts for each calf with the whey; at noon, fed the whey alone. We set the whey in a clean vessel in a cool place, where it would not sour, for evening, warming it to near animal heat. In the morning, fed the first whey dipped from the cheese, and when about ten weeks old, one of them was killed by accident; to the other, we fed shorts till it was three months old; after fall feed was good, we fed her whey twice a day for a time, and then once a day, as long as we made cheese. In the winter, besides hay, she was fed a single handful, about ⅔ of a gill of flaxseed, mixed with a pint of wheat bran, twice a day; did not feed her any higher, as she was in as good flesh as was desired. She is now the largest heifer of her age in the vicinity—is as large as my two years old heifers that had a liberal supply of milk for the first ten or twelve weeks, and much more grain the first winter.

This year, 1835, we have fed two calves in the same manner; one of them has had no milk since it was twenty days old; it was in as good flesh but I think did not grow as fast for two or three weeks as it would on milk; they are doing as well as the one last year. I think they are now gaining of some calves in the vicinity that run with their dams.

From the above observations, I have drawn the following conclusions:

1st. That a calf may be raised well, on less than half the milk required to fatten it; that if they do not grow as fast for two or three weeks, they will gain it in the latter part of the season, and be better in the fall than those fed in the usual way.

2d. That the feed of calves should not be changed suddenly from a liberal supply of milk to grass, as it would not be very dissimilar to forcing a plant forward in a hot bed, and then transplanting it into the open air, when the temperature is but just above freezing.

3d. That it is more profitable to feed whey to calves than to hogs.

4th. That the practice is inexcusable of slaughtering calves and throwing their flesh to the hogs, because their milk will fetch more in cheese, than the veal will for the table. If the Creator had given us liberty to destroy the lives of his creatures thus wantonly—the flesh of the swine thus fed, must be unwholesome food. The fluids and flesh of carniverous animals, or such as feed on flesh, are highly charged with acrid particles, which may strictly be termed poisonous. It is believed that nothing but extreme hunger will induce one carniverous animal to eat the flesh of another, except, that dogs kept on vegetable food, have sometimes been eaten by wolves; and it is believed that the flesh of dogs thus fed, would be less deleterious than pork fed on flesh; pork thus fed, should be prohibited from being sold for food, as it is calculated to produce the most virulent disorders, such as putrid fever, cholera, &c.

M. R. PORTER.

Fowler, Tumbull Co. Ohio, Oct. 12, 1835.

IMPORTATION OF VALUABLE ENGLISH STOCK.

I observe in the last number of the Genesee Farmer, a recommendation for the formation of an association to import Short Horned Cattle.

I beg to state, that I have myself recently brought from England a number of the best description of cattle, sheep and horses. The cattle are chiefly of the improved Durham Short Horns, amongst which are 4 yearling bull calves, several heifers of the same age, and the rest milch cows; many of which are now in calf to my pure bred bull "*Rover*," sired by "*Rockingham*." My sheep were obtained from the best English breeders, and are of the most improved sort, remarkable both for quality and quantity of wool. The horses, comprise two yearling stud colts from the celebrated racing horse "Humphery Clinker," (out of thorough bred mares which I now have) one two year old stud colt of the hunting breed, by old Catfoss—one three year old stud of the Cleveland Bay, by "Strickland's King Alfred," and several mares of the various breeds. The whole of the above were selected by myself from the most superior stock of that country. Should any of those gentlemen who are so laudably coming forward to form the association alluded to for the important purpose of improving the stock of this country, deem it worth their notice to view the above, I shall have great satisfaction in showing the same to them. I likewise brought over with me some hogs, which I consider of an excellent kind.

THOS. WEDDLE.

East-Bloomfield, October 6, 1835.

BERKSHIRE PIGS.

Mr. Buel,—Sir—If your patience is not already exhausted with my *piggish epistles*, I will trouble you with this, my last.

The Berkshire breed of pigs now in my possession, were imported by Siday Hawes, Esq. in 1832.

Previous to his leaving England to settle in this country, Mr. H. spent some time in search of the *best breed* of pigs to introduce here, and finally settled upon the Berkshire, as uniting the most desirable qualities; viz. *good breeders, early maturity*, and *great aptitude to fatten*. They are thick, shortlegged, round bodied animals; remarkable heavy in the hams, and very peculiar for smoking, being more lean than fat, and may be killed at any weight from 25 to 700 lbs.

I have tried this cross with my *Improved China*, and was much pleased with the result. A pig is now fattening, which when killed you may hear the results.

This breed of pigs is spreading over the country—having sold them to Edwards Ogden, Esq. of New-Orleans—J. Elliot, Esq. of Tuscumbia, Alabama—Geo. S. Attmore, Esq. Newbern, N. C.—A. A. M. D. Robinson of Kentucky, and to gentlemen in various parts of this state. I have only a few males on hand for sale. My price for these, as well as the Chinese, is Ten Dollars a pair, not over eight weeks old—after that age, twelve and a half cents per pound extra for all over 45 pounds.

The above cut represents a Berkshire sow—and from "Parkinson's Treatise on live Stock" I have transcribed the following account of this celebrated breed.

"The Berkshire pigs are distinguishable by their colour and shape. Their colour is spotted white, and some are sandy with small black spots irregularly all over them—a few are entirely sandy. The hair is long and thinly set, but much curled, looking very rough, and the real true breed feather-eared, which looks rather unseemly, but is found not to be an imperfection. The hair indicates a coarseness, as if their skins were thick, but they are quite the reverse, the best sort, although very large, remarkably thin in the rind, and equally fine in the flesh; they are with very few or any exceptions better known by their hair than by any other appearance, and the best of these pigs have no bristles; indeed so remarkable are they in that respect that those I took to America received the name of 'Parkinson's no bristle pigs.' The Americans were so partial to this breed that I sold sucking pigs weighing 30 to 32 lbs. each when seven or eight weeks old at $20 for a sow, and $30 for a boar. I sold a sow pig at six months old for $70. One sow of this kind made $125 in eleven months: and Gen. Stone offered to lay 100 guineas that he would raise two of these pigs, and produce an increase of one pound a day for a whole year. This bet was offered in a public company and canvassed over, but was not taken, as their perfections had been seen. I knew a pair of the same breed, killed at the age of one year and a quarter, which weighed 41 stone, consequently the pigs' age being 456 days and the weight 574 lbs. the increase for the time was 1 lb. 4 oz. and 9ds. a day.

I have purchased of E. Phinny, Esq. of Cambridgeport, Mass. a sow pig of a breed very famous in that state known as the "*Mackey Breed*," which have taken several premiums at Brighton and other fairs, with which I intend crossing with my China and Berkshire as an experiment. I also engaged of a gentleman near Charlestown a pair of pigs of the same breed, but from some cause or other, they have not come to hand.

I have also a pair of pigs which I procured of Judge Geer, of Glen's Falls, very celebrated in the county of Saratoga, for great weight, having attained at nine months 300 lbs. It is my intention to keep each breed pure and distinct, as well as to try the different crosses. Should I be successful in my experiments, you may hear from me again.

CALEB N. BEMENT.

Watervliet, Oct. 14, 1835.

J. Buel, Esq.—Sir—Believing it the duty of every man to communicate to the public any information that he can give, tending to the advancement of agricultural improvements, I take the liberty to communicate the effect of an experiment on the use of clothier's flock as manure.—Observing at a woollen factory in my neighborhood, that they were throwing the shearings of the cloth and waste wool into the river, it occurred to me, that it being an animal substance, it would be a good manure. I procured several wagon loads and spread on my land; but in order to test the value of it, I spread on a small piece of ground before ploughing about one bushel of the flock to a rod square of old corn hills, on a gravelly, pavingstone soil; and by the side of this, I spread hog manure at the rate of at least double that quantity, and ploughed both in. Where the flock was spread, I suffered no other manure to be used, and planted both with Indian corn. On the ground where the hog manure was used, I manured in the hill with the same, and plastered twice; after the corn came up, and between the hoeing and harvesting the corn, I measured off seven square rods as correctly as possible, allowing half the space between the

outside rows. The produce was 8½ bushels of ears, large measure, which is a fraction over 99 bushels of shelled corn to the acre. The same quantity of the land, where the hog manure was used, did not produce 50 bushels to the acre. The land was as near equal in quality as could be—planted the same day, with the same kind of seed, and treated exactly alike, except in the manuring and plastering. I have learned since trying the experiment, that flock has been used by some in this country, as a manure; yet I believe the value of it is not generally known. You will make such use of the above information as you think proper.

Very respectfully your ob't serv't, J. BURROWS.

PATENT CHEESE-SHELVES.

Mr. Buel,—Dear Sir—I deem it due to the public to offer for the columns of the "Cultivator," some notice of "The semi-revolving cheese rack or shelves"—an improvement for which Mr. Henry Weber, of East Richfield, Otsego county, has lately obtained a patent, and which I doubt not, will meet the approbation of every dairy man who will make trial of the same, and which, I think, will go into general use at no very remote period. The saving in labor and risk of the cheese are great, and the expense of fitting up a new room on his plan would not greatly exceed that in common use, as the room may be much smaller.

One rack with 6 shelves six feet long, 24 inches wide, set 11 inches apart, will hold 18 cheeses weighing from 100 to 140 lbs. each, suspended by a wooden shaft 2 inches square, resting on 2 rails extending the whole length of the room, 8½ feet high, or if only a single rack, on 2 posts; each rack requires about 4 feet on the length of the rails, to turn well,—and its cost will not exceed 6 dollars, including the materials of which it is made.

On this system, the cheese dries much faster, as it is turned on to the dry side of the shelf every day, and has a sound and dry rind. He has one set of extra shelves, which are slipped in close about the cheese before turned, on which shelf the cheese lies when turned over; the others are then liberated for another rack, and so on through the room. By the aid of these 6 extra shelves the cheese need not fall but a trifle, if any. An examination of this improvement may be had by any one calling on Mr. Weber, at East Richfield, or the subscriber, in South Trenton Oneida county.

EPHRAIM PERKINS.

NEW CONTRIVANCE.

Jesse Buel—Dear Friend—Having found it troublesome to boil potatoes for my stock in a potash kettle, and to get them out of the water when cooked, I had a thing made that has very much lessened the difficulty.

It is a square wooden basket about 24 inches at top, 20 inches at bottom and 17 inches deep; frame of oak 2 by 1½ inches with oak slats of 1 inch, and same distance apart, to fill sides and bottom, two of the top rails projecting at each end, made longer than the diameter at the kettle, serving as handles to lift the basket and as a rest on the brim of the kettle for the purpose of keeping the potatoes above the water in it. I first put the potatoes into the basket, and by throwing upon them a few pailsful of water, and a person at each end lifting and shaking them, most of the dirt is washed out; then set the basket in the kettle with only water enough to reach the bottom of the basket, throw a piece of old carpet over the kettle to keep in the steam, make a brisk fire and the potatoes are soon *fit to put on a table.*

A boy at each end can lift the basket out, refil, and set another mess cooking in a short time, a little hot water should be added as each new mess is put into the kettle to replace the waste by steam.

In the last Cultivator, under the article "*The Roller*," you speak of "*the spiked roller* which is used for pulverizing stiff soils preparatory for wheat." I was before ignorant of such an implement, but had concluded to make one for the purpose of disturbing the moles, which are numerous and destructive in my newly made clover fields. It has also occurred to my mind that a narrow rotary harrow may be constructed to till growing corn advantageously, and I mention it in hopes that some ingenious person may propose a model, or construct one.

Thy assured Friend, ROB. WHITE, Jr.

Shrewsbury, 10th Mo. 1835.

CANADA THISTLES AND SWEET ELDER.

There is nothing that indicates in a greater degree, the spirit of improvement among our farmers, than the frequent queries that are made in the agricultural papers, in respect to "the best ways and means" of managing their lands,—and the frequent answers that are given to such questions by scientific agriculturists. It is thus that any information obtained by one man, either by scientific observation or by accidental causes, becomes the public property, and is equalized through the community.

For instance, it has been found difficult to construct *Ice Houses* in a gravelly soil, that would keep ice through the summer. But it has been ascertained by philosophical experiment and observation, that *tan bark* is a most perfect non-conductor of heat,—and that, consequently, by surrounding the ice 2 or 3 feet in such *tan*, it can be kept with ease and certainty.

So also in regard to *Cider*—it is satisfactorily settled by *experience*—the best teacher of wisdom,—that after it is placed in the cellar in barrels, the *bung should never be taken out*,—allowing only a *small gimblet hole*, for a vent, to prevent the fermentation from bursting the barrels. Cider thus kept, is far superior to that which is exposed in a greater degree to the open air. And so I could go on almost ad infinitum, illustrating the same idea.

These to be sure, are small things,—but remember, the mountain is composed of mites,—and that many *small things, well conducted*, go to make up the mass of a family's happiness and prosperity.

The poet says,

"Great oaks from little acorns grow.
"Large streams from little fountains flow."

A neighbor of mine, who is also a constant reader of the excellent and useful paper, *the Cultivator*, desires me to say that he had on his farm, last year, a quantity of *Canada Thistles*, growing very thrifty,—that just before the blossoms began to open, he caused them to be mown, and every one of them were entirely destroyed, root and branch. He thinks, and others have expressed the same opinion, that by mowing them at the particular time, just before they begin to blossom, they are *sure to be destroyed.* Some people think they must be cut at a particular time during the moon's changes in order to kill them. How much *influence the moon has on Canada thistles*, I shall leave to all the *old women* and Sir John Herschel to determine!

I have heard it suggested that the severe frost of last winter killed many Canada thistles. If so, it makes good the old adage,—"There is no *great evil* without *some good.*"

A friend wishes me to inquire of the numerous readers of the Cultivator, if they know of any method of destroying the *Sweet Elder*. It grows very luxuriantly on his farm, and is very troublesome. He has tried to kill them by repeated mowing—but it rather seems to increase their growth. He has also tried ploughing and pulling them up—but all to no purpose, as they will grow again from a small root—and some land is so wet it cannot be ploughed.

Can any one tell how to *exterminate* the *Sweet Elder?** If they possess any such information and will communicate it for the Cultivator, they will do a favor to at least *one New-England Farmer.*

Bernardston, Mass. Oct. 1835. H. W. C.

To the Conductor of the Cultivator.—Sir—I think if I understand thy suggestions in the Cultivator, for to say that you feel yourself excused from giving the public any information on the subject of rearing and feeding silk worms, as some one has issued a paper devoted to that subject.† I confess that I should not be satisfied to take a paper that would tolerate the idea, that farmers should be at the expense and trouble to take one paper devoted to the improvement of Indian corn, another to potatoes, and a third, to treat of the matter and efficacy of manures. The paper that farmers should patronize, should treat of every subject connected with farming, and indeed of every subject connected with rural economy. I therefore conclude, that notwithstanding Mr. Blydenburgh's very respectable paper, you will think it an object to give your patrons all the light on the subject of rearing and feeding silk worms, that may be in your power—and to render that information useful to the people, I should think, as a proper means of encouraging the growth of silk, you also should inform cottagers and operatives how to reel and prepare their silk for market. All these subjects are so intimately connected with agriculture, and the subject is so new in this country, it should supersede other matters. I learn from the few publications I have seen, that a great mortality often attends the feeding of silk worms.

The only silk worms I have ever seen were of my own hatching last spring. A very polite neighbor sent me about 500 ova, which were hatched at the right time to be fed from three small mulberry trees of two years' growth, that I had procured for ornament, rather than use. From these trees, one about 7 feet, the other about 2½ feet high, I collected probably food enough for my worms until three days before they began to spin. And then the consumption was so great that I was obliged to inquire for the wild mulberry of the neighborhood, and this brought me to examine the varieties that our woods and hills produce. Some had small hard leaves, others bore large stiff thick leaves like unto the drawing No. 1.‡

These produce very fine fruit, and the last I found in my search was a tree growing on the farm of Jacob R. Snyder, Esquire, near the Rosendale Bridge; this grew on the side of a steep mountain, very much in

* Our *Massachusetts* correspondent will find this inquiry answered by a *New-Jersey* Farmer, Simeon M'Coy, in page 81 of this volume—another evidence of the facility afforded by agricultural papers, of diffusing useful agricultural knowledge.

† We *now* publish, that we *shall* take cognizance of whatever concerns the silk grower, and thank Agricola for his hints, as well as for his practical information on the subject.—*Cond.*

‡ The drawings here referred to came to hand, and may be examined at the Cultivator Office. No. 1 is about 8 inches long, above the footstalk, and of like breadth, and is much contracted in the longitudinal centre, resembling in shape the form of the leaves of the common white Mulberry. No. 2 resembles the leaf of the Chinese Mulberry, and is 8 inches broad and more than 10 long, narrowed and pointed at the apex. No. 3 is about 11 inches broad and the same in length.

the manner the China Mulberry is said to grow; in clumps with strong sprouts and succors starting out from the roots and at the bends of the tree, and bore pretty large fruit sparsely over the main branches. The leaves, a drawing of which I have herewith enclosed, marked No. 2* is of the exact dimensions of several leaves taken from different parts of the tree.

These leaves were of a bright green, more smooth than any American mulberry I had before seen, and very tender, and when given to my silk worms with the white Italian mulberry leaves, they appeared to prefer these large leaves. I attempted to inoculate these on the branches of my Italian mulberry but failed. They did not take.

Drawing No. 3* is taken from a leaf raised from the seed of the China mulberry. This drawing does not describe the actual size of the leaf as it was much puckered and very uneven on the surface, but the size is exact as to the circumference, for like all the rest the leaf was laid down on the paper and a pencil run accurately round the edge.—Thus much for the mulberry leaves on which I feed my 500 worms. I shall now describe the progress of my brood.

My silk worms began to hatch on the 29th May, 1835, when the mulberry leaf was a little larger than a shilling piece; I fed them to the 20th July, on three trees, two years' growth from lays. Then obtained leaves from a wild mulberry on the mountain at Rosendale. Up to this time I did not discover that more than two worms had died. I now fed them with the wild mulberry leaves to the 26th July, when they began to spin. The distance to Snyderville being about two miles, and the weather very warm, I only went twice for leaves, and kept them in a cellar wet, in which state they were fed with occasionally some young leaves that would come on my Italian mulberry trees. Under this treatment, I lost 5 or 6 worms before they all had spun; that of 500 worms not more than 8 died during their whole progress from the egg to maturity, and all but two died I think by reason of feeding wet leaves.

On the whole, I conclude, from my self-taught experiment, (for I have never seen any worms but those I have reared this season) that it would require very few Italian mulberry trees to feed 60 or 100,000 silk worms. And 2d, I am led to believe there are such an extensive variety of native mulberries, that some of them may on experiment be found to be equally suitable for the feeding silk worms as the Italian, or Chinese mulberry, and of all that I have seen there are two sorts or varieties at the Rosendale, that appear best calculated for that purpose. These grow conveniently: the leaf is very large and succulent; the tree appears inclined, if it had room, to grow low with spreading boughs, and the worms eagerly eat the whole leaf with the exception of the spine, and if fully grown, a few of the largest ribs. AGRICOLA.

Science of Agriculture.

From Chaptal's Chemistry applied to Agriculture.

SUCCESSION OF CROPS.

A soil may be forced, by extreme care, enormous expense, and the use of manure without measure, to produce all sorts of crops; but it is not in such sort of proceedings that the science of agriculture consists. Agriculture ought not to be considered as an object of luxury; and whenever the produce of agricultural management does not amply repay the care and expense bestowed upon it, the system followed is bad.

A good agriculturist, will, in the first place, make himself acquainted with the nature of his soil, in order to know the kind of plants to which it is best adapted; this knowledge may be easily acquired by an acquaintance with the species of the plants produced upon it spontaneously, or by experiments made upon the land, or upon analogous soils in the neighborhood.

But however well adapted the soil and climate may be to the cultivation of any particular kind of vegetable, the former soon ceases to be productive if constantly appropriated to the culture of plants of the same or analogous species. In order that land may be cultivated successfully, various kinds of vegetables must be raised upon it in succession, and the rotation must be conducted with intelligence, that none unsuited either to the soil or climate may be introduced. It is the art of varying the crops upon the same soil, of causing different vegetables to succeed one another, and of understanding the effect of each upon the soil, that can alone establish that good order of succession which constitutes *cropping*.

A good system of cropping is, in my opinion, the best guarantee of success that the farmer can have; without this, all is vague, uncertain, and hazardous. In order to establish this good system of cropping, a degree of knowledge is necessary, which unhappily is wanting to the greater part of our practical farmers. I shall here state certain facts and principles, which may serve as guides in this important branch of agriculture.

More extensive information on this subject may be found in the excellent works of Messrs. Yvart, and Pictet.†

PRINCIPLE 1. *All plants exhaust the soil.*

Plants are supported by the earth, the juices with which this is impregnated forming their principal aliment. Water serves as the vehicle for conveying these juices into the organs, or presenting them to the suckers of the roots by which they are absorbed; thus the progress of vegetation tends constantly to impoverish the soil, and if the nutritive juices in it be not renewed, it will at length become perfectly barren.

A soil well furnished with manure may support several successive crops, but each one will be inferior to the preceding, till the earth is completely exhausted.

PRINCIPLE 2. *All plants do not exhaust the soil equally.*

Plants are nourished by air, water, and the juices contained in the soil; but the different kinds of plants do not require the same kinds of nourishment in equal degrees. There are some that require to have their roots constantly in water; others are best united with dry soils; and there are those again, that prosper only in the best, and most richly manured land.

The grains and the greater part of the grasses, push up long stalks, in which the fibrous principle predominates; these are garnished at the base by leaves, the dry texture and small surface of which do not permit them to absorb much either of air or water; the principal nourishment is absorbed from the ground by their roots; their stalks furnish little or no food for animals; so that these plants exhaust the soil, without sensibly repairing the loss, either by their stalks, which are cut to be applied to a particular use, or by their roots, which are all that remain in the ground, and which are dried and exhausted in completing the process of fructification.

Those plants, on the contrary, that are provided with large, fleshy, porous, green leaves, imbibe from the atmosphere carbonic acid and water, and receive from the earth the other substances by which they are nourished. If these are cut green, the loss of juices, which the soil has sustained by their growth, is less sensibly felt, as a part of it is compensated for by their roots. Nearly all the plants that are cultivated for fodder are of this kind.

There are some plants which, though generally raised for the sake of their seed, exhaust the soil less than the grains; these are of the numerous family of leguminous plants, and which sustain a middle rank between the two of which I have just spoken. Their perpendicular roots divide in the soil, and their large leaves, and thick, loose, porous stalks readily absorb air and water. These parts preserve for a long time the juices with which they are impregnated, and yield them to the soil, if the plant be buried in it before arriving at maturity; when this is done, the field is still capable of receiving and nourishing a good crop of corn. Beans produce this effect in a remarkable degree; peas to a less extent.

Generally speaking, those plants that are cut green, or whilst in flower, exhaust the soil but little; till this period they have derived their support almost exclusively from the air, earth, and water; their stalks and roots are charged with juices, and those parts that are left in the earth after mowing, will restore to it all that had been received from it by the plant.

From the time when the seed begins to be formed, the whole system of nourishment is changed; the plant continues to receive nourishment for the perfecting of its seed, from the atmosphere and the earth, and also yields to the grain all the juices it had secreted in its own stalks and roots: by this means the stalks and roots are dried and exhausted. When the fruits have arrived at maturity the skeleton remains of the plant, if abandoned to the earth, restore to it only a small portion of what had been taken from it.

The oleaginous seeds exhaust the soil more than the farinaceous seeds; and the agriculturist cannot be at too much pains to free his grounds from weeds of that nature, which so readily impoverish them; especially from the wild mustard, sinapis arvensis, with which cultivated fields are so often covered.

PRINCIPLE 3. *Plants of different kinds do not exhaust a soil in the same manner.*

The roots of plants of the same genus or family, grow in the soil in the same manner, they penetrate to a similar depth, and extend to corresponding distances; and exhaust all that portion of the soil with which they come in contact.

Those roots which lie nearest the surface, are more divided than those that penetrate deeply. The spindle or tap roots, and all those that penetrate deeply into the earth, throw out but few radicles near the surface, and consequently the plant is supplied with nourishment from the layers of soil in contact with the lower part of the root. Of the truth of this I have often had proof, and I will mention an example. If when a beet or turnip is transplanted, the lower portion of the spindle be cut off, it will not grow in length, but in order to obtain its supplies of nourishment from the soil, it will send out radicles from its sides, which will enable it to obtain the necessary supplies from the upper layers of the soil; and the root will become roundish instead of long.

Plants exhaust only that portion of the soil which comes in contact with their roots; and a spindle root may be able to draw an abundance of nourishment from land, the surface of which has been exhausted by short or creeping roots.

The roots of plants of the same and of analogous species always take a like direction, if situated in a soil which allows them a free development; and thus they pass through, and are supported by, the same layers of earth. For this reason we seldom find trees prosper that take the place of

* See note on page 124.

† "Cours complet d'Agriculture," articles *Assolement* et *Succession de Culture*, par Yvart. "Traite de Assolemens," par Ch. Pictet.

others of the same species; unless a suitable period has been allowed for producing the decomposition of the roots of the first, and thus supplying the earth with fresh manure.

To prove that different kinds of plants do not exhaust the soil in the same manner, it is perhaps sufficient for me to state, that the nutrition of vegetables is not a process altogether mechanical: that plants do not absorb indiscriminately, nor in the same proportions, all the juices and salts that are presented to them; but that either vitality, or the conformation of their organs, exerts an influence over the nutritive action; that there is on the part of plants some taste, some choice regarding their food, as has been sufficiently proved by the experiments of Messrs. Davy and De Saussure.* It is with plants as it is with animals, there are some elements common to all, and some peculiar to each kind: this is placed beyond doubt, by the preference given by some plants to certain salts, over others.

PRINCIPLE 4. *All plants do not restore to the soil either the same quantity or the same quality of manure.*

The plants that grow upon a soil, exhaust more or less of its nutritive juices, but all return to it some remains, to repair a part of its loss. The grains and the oleaginous seeds may be placed at the head of those which exhaust a soil the most, and repair the least the injury done it. In those countries where plants are plucked up, they return nothing to the soil that has nourished them. There are some plants to be sure, besides those mentioned above, that by forming their seed consume a great part of the manure contained in the soil; but the roots of many of these soften and divide the soil to a considerable depth; and the leaves which fall from the stalk during the progress of vegetation restore to the earth more than is returned by those before mentioned. There are others still, the roots and stalks of which remaining strong and succulent after the production of their fruits, restore to the soil a portion of the juices they had received from it; of this kind are the leguminous plants.

Many plants that are not allowed to produce seed, exhaust the soil but very little; these are very valuable in forming a system of successive crops, as by introducing them into the rotation, ground may be made to yield for many years without the application of fresh manure; the varieties of trefoil, especially clover and sainfoin, are of this sort.

PRINCIPLE 5. *All plants do not foul the soil equally.*

It is said that a plant fouls the soil, when it facilitates or permits the growth of weeds, which exhaust the earth, weary the plant, appropriate to themselves a part of its nourishment, and hasten its decay. All plants not provided with an extensive system of large and vigorous leaves, calculated to cover the ground, foul the soil.

The grains, from their slender stalks rising into the air, and their long, narrow leaves, easily admit into their intervals those weeds that grow upon the surface, which being defended from heat and wind grow by favor of the grain they injure.

Herbaceous plants, on the contrary, which cover the surface of the soil with their leaves, and raise their stalks to only a moderate height, stifle all that endeavors to grow at their roots, and the earth remains clean. It must be observed, however, that this last is not the case unless the soil be adapted to the plants, and contain a sufficient quantity of manure to support them in a state of healthy and vigorous vegetation; it is for want of these favorable circumstances that we often see these same plants languishing, and allowing the growth of less delicate herbs, which cause them to perish before time. Vegetables sown and cultivated in furrows, as are the various roots and the greater part of the leguminous plants, allow room for a large number of weeds; but the soil can be easily kept free by a frequent use of the hoe or weeding fork; and by this means may be preserved rich enough for raising a second crop, especially if the first be not allowed to go to seed.

The seeds that are committed to the ground often contain those of weeds amongst them, and too much care cannot be taken to avoid this; it is more frequently the case, however, that these are brought by the winds, deposited by water, or sown with the manure of the farm yard.

The carelessness of those agriculturists who allow thistles and other hurtful plants to remain in their fields, cannot be too much censured; each year these plants produce new seeds, thus exhausting the land and increasing their own numbers, till it becomes almost impossible to free the soil of them. This negligence is carried by some to such an extent, that they will reap the grain all round the thistles, and leave them standing at liberty to complete their growth and fructification. How much better it would be to cut those hurtful plants before they flower, and to add them to the manure of the farm. From the principles which I have just established, we may draw the following conclusions.

1st. That however well prepared a soil may be, it cannot nourish a long succession of crops without becoming exhausted.

2d. Each harvest impoverishes the soil to a certain extent, depending upon the degree of nourishment which it restores to the earth.

3d. The cultivation of spindle roots ought to succeed that of running and superficial roots.

4th. It is necessary to avoid returning too soon to the cultivation of the same or of analogous kinds of vegetables, in the same soil.*

5th. It is very unwise to allow two kinds of plants, which admit of the ready growth of weeds among them, to be raised in succession.

6th. Those plants that derive their principal support from the soil should not be sown, excepting when the soil is sufficiently provided with manure.

7th. When the soil exhibits symptoms of exhaustion from successive harvests, the cultivation of those plants that restore most to the soil, must be resorted to.

These principles are confirmed by experience; they form the basis of a system of agriculture rich in its products, but more rich in its economy, by the diminution of the usual quantity of labor and manure. All cultivators ought to be governed by them, but their application must be modified by the nature of soils, and climates, and the particular wants of each locality.

To prescribe a series of successive and various harvests, without paying any regard to the difference of soils, would be to commit a great error, and to condemn the system of cropping in the eyes of those agriculturists, who are too little enlightened to think of introducing into their grounds the requisite changes.

Clover and sainfoin† are placed amongst the vegetables that ought to enter into the system of cropping, but these plants require a deep and not too compact soil, in order that their roots may fix themselves firmly.

Flax, hemp, and corn require a good soil, and can be admitted as a crop only upon those lands that are fertile, and well prepared.

Light and dry soils cannot bear the same kind of crop as those that are compact and moist.

Each kind of soil, then, requires a particular system of crops, and each farmer ought to establish his own upon a perfect knowledge of the character and properties of the land he cultivates.

As in each locality the soil presents shades of difference, more or less marked, according to the exposure, composition, depth of the soil, &c. the proprietor ought so to vary his crops, as to give to each portion of the land the plants of which it is best adapted; and thus establish a particular rotation of crops upon the several divisions of his estate.

The wants of the neighborhood, the facility with which the products may be disposed of, and the comparative value of the various kinds of crops, should all be taken into the calculation of the farmer, in forming his plan of proceedings.

There is another point in regard to crops that ought to be well weighed by the farmer; though his lands may be suited to cultivation of a particular kind, his interests may not allow him to enter upon it. The more abundant any article is, the lower will be its price; he ought then to prefer those crops of which the sale is most secure. If a product cannot be consumed upon the spot, it is necessary to calculate the expense of transporting it to a place of sale in countries where it is needed.

A proprietor ought to provide largely for the wants of his animals and of the men living upon his estate, before arranging for the disposal of surplus crops; he will then calculate his various harvests in such a manner, as to be always secure of receiving from the earth the means of subsistence for those employed in performing the labor.

An intelligent farmer, whose lands lie at a distance from a market, will endeavor to avoid the expenses incident to the transportation of his products; and in order to do this he will give the preference to those harvests of fodder or of roots which may be consumed upon the place by his dependents and his animals.

There is another circumstance which must be attended to in sowing those lands which are light, or which lie upon a slope; for these it is necessary to employ such vegetables as cover the soil with their numerous leaves, and unite in every direction by their roots, thus preserving it from being washed away by rains, and at the same time protecting it from being too much dried by the burning rays of the sun.

I hope it will be written upon the tables of your heart, in characters not to be effaced by ambition, avarice or pleasure, that the only sure and certain happiness to be found on this side of the grave, is a consciousness of your own rectitude. All peace and homefelt joy are the reward of virtue. And there is no applause in this world worth having unless it is crowned with our own.—*Sir J. E. Wilmot to his Son.*

---

* The new theory teaches, that plants do not part their food, but that they throw off, as excrementitious matter, whatever is not adapted to their wants. —*Cult.*

* In addition to the reasons I have given why plants of the same or analogous kinds should not be cultivated in succession upon the same soil, there is another which I will here assign. M. Olivier, member of the French Institute, has described with much care all the insects which devour the neck of the roots of grain; these multiply infinitely if the same or analogous kinds of plants be presented to the soil for several successive years; but perish for want of food whenever plants not suited to be food for their larvæ, are made to succeed the grains. These insects belong to the family of Tipulæ, or to that of flies. (Sixteenth Vol. of the *Memoirs of the Royal and Central Agricultural Society of Paris.*)

† Sainfoin thrives, we believe, only in a calcareous soil. The various attempts to raise it in the states, have hitherto, we believe, wholly failed.—*Cult.*

Miscellaneous.

PINE PLAINS.

[Large districts of our country bear this denomination. Their intrinsic value for agriculture is daily becoming better appreciated; and under improved management, with the aid of the clay marl which generally underlays them, they promise soon to be among our most profitable lands. The following judicious remarks, on the proper mode of cultivating these lands, on "frequent ploughings," and on "natural meadows," although written for Saratoga, have a general application, and cannot but be read with profit by all who cultivate sandy lands. They are extracted from a geological survey of Saratoga county, written by Dr. *Steele*, of Saratoga Springs.]

The method which should be pursued with this soil, in order to obtain the greatest possible profits, seems to be agreed, among the most experienced farmers, to be the following: First crop, winter wheat; second, Indian corn; third, barley, oats, spring wheat or rye, with which grass seed should be sown, (clover and timothy is preferred) and the whole ploughed or dragged in, at the same time. Experience has likewise given currency to the belief that the *roller* is a very important implement in seeding sandy soils. It should be employed immediately after the seed is put in. This renders the surface compact and smooth, and gives a depth and firmness to the roots of the young plants, that they do not possess when the seed is strewed over the surface, as is the usual custom; and besides, it is supposed to protect it very materially against the effects of the winter.

On the following season, the clover is to be well plastered, and the crop mowed for hay: the next season it should be again well strewed with plaster, and it then may be fed until the latter part of August or the beginning of September; at which time it is to be turned over with the plough, and prepared for a future crop of grain. Wheat succeeds well, but there is some contrariety of opinion as to the mode of putting in the seed; the usual practice is to cross plough and break up the sod before the seed is sown; but those who have practised it, think the crop succeeds best when the seed is sown on the top of the furrows, and for this purpose the earth, after being well turned over, is rolled and merely harrowed. The seed is then sown and dragged in with a light harrow, or ploughed in the way of the furrows, with a very light plough; but not so as to disturb the sod.

Some farmers, who have not made themselves acquainted with the use of the roller, have adopted the following method: they simply turn over the sod, and then cast the seed immediately on the top of the furrows; but it is obvious, that passing a roller over the surface, and then a light harrow would have the effect to fill up the interstices of the furrows, and render them more even for the reception of the seed; besides, it would render the earth more compact, and press it more closely to the green crop turned under, and this is considered very essential in order more readily to perfect its decomposition, and thereby render it subservient to the growth of its successor, for which purpose it is buried.

Many farmers prefer Indian corn, instead of wheat, on the sod, and some difference of opinion exists as to the propriety of turning over the sod in the fall, or in the spring immediately before planting. It should always be turned over in the fall, before it has ceased growing, and in the spring after it has pretty well advanced.

It seems to be agreed on all hands, that three successive crops are all that should be attempted before the field be again seeded, and the same rotation of crops be pursued. Under this course the quality as well as the quantity of the produce will annually improve, and an increase of fertility be constantly added to the soil.

This soil would receive great and lasting improvement from the transposition of the marl which lays at the bottom, to the surface. This would give more tenacity and consistency to the soil, and prepare it more effectually for the benefit of the vegetable manure, which is to be supplied by frequent seeding. With this dressing, all those sandy hillocks, which are blown about like snow drifts, might be reclaimed and converted into ornamental as well as profitable appendages to the farm.*

The practice of clovering and plastering has been resorted to, and is in general use for the purpose of improving the soil; and it is universally acknowledged to be by far the cheapest and best method hitherto adopted. Much complaint is, however, made of the liability of the clover to be killed out during the winter; but several distinguished practical farmers speak with confidence, that if the seed be ploughed or well harrowed in, and then well rolled, this evil will no longer exist. Covering the seed when it is sown, is in practice with some farmers, and the effects resulting from it justifies the procedure; but the roller, so far as my knowledge extends, has seldom been used on these soils, although it has been resorted to, and, indeed, is in general use with some of the farmers on the loamy soils, where its good effects have not been denied by any.

The idea of rendering the earth "*mellow*" for the reception of the seed, which means, to have it finely pulverized and light, in common language, "*like an ash heap*," does not appear to be so important as many of our farmers seem to imagine. The great object of ploughing, is to destroy and cover in the earth every species of vegetation, that the crop to be expected from the seeding, may have nothing to choke and impede its growth, or deprive it of any share of the nutriment that there is in the soil, which would be useful to its own health and vigour; when this object is effected, the plough can be of no further use, except to cover the seed.

The prevalent opinion, that turning in the *dew* or exposing a *new surface* of the earth frequently to the rays of the sun, enriches the soil, has likewise no foundation in fact. The earth can imbibe nothing from the sun's rays but heat and light, which it possesses in sufficient quantity for all the purposes of vegetation, where it has not been moved at all. Who has not observed the most luxuriant spontaneous productions, where the soil had not been stirred for years? and it is a maxim with farmers, that "where weeds grow luxuriantly, any other vegetable will." Indeed, the frequent exposure of a new surface of the soil, during the summer months, must expose the volatile principles which it may contain to exhalation, and thereby endanger the loss of one essential article to its fertility, which, in soils that contain much animal matter, is very considerable. The turning in of the dew, is equally absurd; it can contain no ingredient that is not found in rain-water, which is nearly pure. The dew is simply the exhalations of the day, which are condensed during the cool of the evening; like rain, it forms an essential moisture for the support of vegetation, but can have no other effect.

I saw several fields, in the town of Providence, in the fall of 1821, where rye had been gathered which had been sown the fall before, on sward or old pasture; the grass among the stubble was, undoubtedly, more abundant than it had been for some years before it was ploughed. This could not have failed of rendering the crop much less productive than it otherwise would have been, for beside diverting a share of the nutriment in the soil from the rye, it must have crowded and prevented its spreading.

This luxuriant growth of grass was, undoubtedly, owing to two circumstances in the mode of tillage: 1st, the imperfect manner in which the sod, during the first ploughing, was turned over, owing to the great number of loose stones, which impeded the free and direct motions of the plough; and 2d, to the subsequent dragging and cross ploughing, which had the effect to place a great proportion of the sod grass-side up again, with the additional advantage of having the compressed and distorted roots torn asunder, and thinned in such a manner as to render them more susceptible of nutriment.

The evil might have been prevented, not only to the immediate advantage of the crop, but to the permanent benefit of the soil, by devoting the time that was spent in "*cross ploughing and harrowing*," to removing the impediments to the free motions of the plough, and then carefully turning the sod so effectually as perfectly to cover the face of it; a heavy roller then passed over the surface, would have the effect to secure it in its place, to press the loose earth more firmly into the spaces between the furrows, and prevent more effectually, the possibility of its again vegetating. In this situation, it is ready for the seed, which should be covered with a light plough or harrow, special care being taken not to disturb or displace the sod which, thus confined, soon commences decomposing, or, in the common phrase, "*rotting*," thus furnishing an important and wholesome nutriment to the corn plants, whose roots are pushing in all directions into its substance.

The thick, stiff, and tough nature of the soil of this region, is offered as an objection to this mode of procedure. I am aware that the spontaneous grasses, particularly on a fertile soil, commonly produce a more stubborn and unmanageable sod than that produced by the grasses usually cultivated, but I believe no method will be found more effectual in decomposing it, as that of covering it closely in the earth. The objection, however, may be remedied by substituting the more useful grasses, as clover or timothy, which furnish a much better pasture, give a greater abundance, and a better quality of hay, and when turned under, yields a much more prolific ingredient to an exhausted soil. If this practice were pursued, I can see no reason why *wheat* cannot be produced here as well as in the adjoining town of Galway, where more wheat is raised than in any other town in the county, particularly should the mode of manuring with *lime* be adopted.

It should be observed, that in Galway, as in most places where wheat is raised in the greatest perfection, lime forms one of the ingredients in the composition of the soil, while in that of Providence, and in the whole

* Some years ago I published a paper on the existence of marl in this county, and its application as a manure; but I have yet to learn whether any use has ever been made of it

The Agricultural Society of this county have this year, (1822) awarded a premium of $6 to Gilbert Waring, of the town of Saratoga Springs, for the best experiment with marl—(I believe there was no competition.) He applied it to some light sandy knolls, which were so poor as to be incapable of producing even weeds. The rest of the field, excepting several of these hillocks, was a thick clover-sward, which was turned over in the fall, and about the same time the marl was conveyed to these barren spots, in the proportion of from 60 to 100 loads to the acre. In the spring succeeding, the whole field was planted with Indian corn. The young plants, on the places where the marl was applied, began to distinguish themselves at an early period, by a much darker colour, and a more luxuriant growth, which they continued to exhibit through the season; and at harvest, the crop was judged to be one-third better than any other part of the field, from an equal quantity of ground.

The marl which was used has the appearance of *blue clay*, but effervesces very strongly with acids.

of the primitive region of this county, where wheat is considered a very precarious crop, lime is hardly discernable among its component parts.

Experiments made with lime in Galway, and along the secondary region, have added but little to its credit as a manure. This result, is owing to the soil already containing a sufficient quantity for all the purposes of vegetation. It is in the primitive region where this article is deficient, and where its application can be expected to have a good effect.

FREQUENT PLOUGHING.

That frequent ploughing is useless, and frequently injurious, may be inferred from the experience of many of the most observing farmers. The practice of merely turning over the sod and sowing on the furrows, (see page 64,) is becoming every year more popular, and an intelligent farmer has just given me the following account of a process, which he tried the season past.

Having a clean clover field, which he intended to plant with Indian corn, a part of it was ploughed and planted in the usual way, while the other part was merely ridged or "*back-furrowed*," at sufficient distances for the rows, while the space between was left unmoved and green with clover, to be turned over to the hills during the process of hoeing; the corn was planted on the centre of the ridge. The success of this process was very observable through the season; the corn had a much more rapid and luxuriant growth, and at harvest yielded a considerable more abundant crop than the other parts of the field.

The result is imputed, by my informant, to the following causes: 1st. "the ground beneath the hills of corn remaining unmoved and covered by the furrows, retained the moisture longer than that which had been turned over and exposed to the air and sun; hence the plants did not suffer by the drought, as did those on the other part of the field." And 2dly, "the turning of the sod, which was permitted to grow between the rows, up to the hills at hoeing time, furnished the roots, as they extended from the ridge, with a new supply of vegetable matter and moisture.

NATURAL MEADOW.

Perhaps no kind of land has been more eagerly sought for, or more highly prized as an appendage to the farm, by the most of our farmers, than what is usually termed "*natural meadow;*" and yet probably no part of the farm is so *unprofitable*. The object is to secure a crop of hay, which it seldom fails to produce; but, it should be remembered, that the quantity is always much less than what might be produced from the same quantity of land by cultivation; its quality is vastly inferior, and the land is totally lost to the production of any other crop. I have frequently counted ten and twelve different species of grass within the compass of a few rods square, and not more than one or two of them that has ever been noticed as furnishing food suitable for the sustenance of stock, to say nothing of the great variety of ferns, rushes and mosses growing upon the same spot, which every farmer would be pleased to have annihilated.

Every farmer should calculate upon the cultivation of his grass, as he does upon that of his grain; he will then be sure always to have a supply, and that too of a quality agreeable to his choice, while the system, if properly pursued, will have the effect to increase the quantity and quality of all his other crops to a degree, that those who are not acquainted with the facts, can hardly believe.

The question has often been asked. What shall we do with the field? it is too wet to plough. The answer is, *drain it*. I have seldom seen a field of this description but what might be drained for a sum considerably less than what the first crop would amount to, and the effects of draining, if properly executed, is permanent.

Since the introduction of gypsum as a manure, the plain lands have greatly increased in value and importance in the estimation of farmers generally; indeed these lands have been commanding a higher price, in this co. than those of any other description, under the same state of cultivation, and it is now believed, by those who have the best opportunity to judge, that no soil can be brought so easily and cheaply into a state of profitable cultivation as that of the plains. This opinion has caused them to be sought after more, and, of course, has raised their value. The soil of these plains being naturally light, is soon exhausted by improper tillage; but where the plan laid down in pages 63 and 65 has been adopted and pursued, there has been no depreciation in its productions, but, on the contrary, they have been almost incredibly augmented.

The subject which excites the most serious apprehensions with regard to the profitable tenure of this class of soil, is the deficiency of fencing timber; but this defect will probably be supplied by the introduction of "*hedges*," and it is believed that our own forests contain the necessary materials for effecting this object, in the CRATÆGUS CRUS-GALLI, or COCCINEA, (*common thorn-bush.*) There are several species of this shrub, natives of the soil, some of which will unquestionably answer our purpose better than any that can be introduced from abroad

The first and only attempt, which I know of in this county, to bring this system into operation, was undertaken by Mr. Davis, on land belonging to J. K. Beekman, Esq. During the fall past, 500 of the plants of this shrub have been placed by Mr. Davis in regular order to form a hedge; they are planted in two parallel lines, twelve inches apart, and at regular intervals of six inches. Mr. D. has likewise planted a quantity of the seed, with a view of ascertaining the best method of obtaining the plants. This is an experiment of much interest, and the result will be looked for with anxiety.

ON STEAMING FOOD FOR HORSES.

It has been ascertained, though perhaps not generally known, that *grain of any kind cannot be dressed or cooked by dry steam applied to the dry grain.* If the steam is at a low pressure, or a little above atmospheric, a species of parching is produced on the grain so treated; and if steam of very light pressure is applied, the grain may be entirely carbonized. An intermediate and very simple process has however been found, whereby grain of any sort can be completely boiled, which is done by *soaking* the grain in water for a period of from six to twelve hours, according to its state of dryness; and then placing it in the receiver described for steaming roots, and applying them for an hour, the grain will come out completely boiled. From this it may be inferred, that each grain becomes a little cauldron, containing as much absorbed water as serves to boil it by the application of steam; but whatever be the rationale of it, we are thus provided with a simple and efficient steaming and boiling apparatus applicable alike to the cooking of juicy roots or tubers, and dry grains.

That horses on a farm may be kept more economically on prepared food than in the state and manner in which food is usually administered to them, I have no doubt. The fact, however, will soon be ascertained, in consequence of the premium which the Highland Society has just now announced on the subject. The results of the experiments which some farmers will make, will, we fondly anticipate, prove the facility of preparing food, and economy in the use of it. We have the authority of the owners of some of the coaching and posting establishments in Edinburgh, for stating, that the saving which will arise from the use of prepared food, in the keep of forty horses, will amount to 140*l.* a year. We have also the high authority of Mr. Dick, the Professor of Veterinary Surgery in Edinburgh, for saying, that *the general health of horses under work, is much better on prepared than unprepared food.*

It is obvious, says Mr. Dick, the grand desideratum is to give food containing as much nutriment, and in as small bulk, as is consistent with the economy of the animal. If this problem is solved, it will follow, as a corollary, that it will be important to give that food which has been found best suited to its proportions, in such a state as is best suited for digestion. This is a point, however, worthy of consideration; and naturally suggests the question, How is the body supplied with nourishment in taking food into the stomach? The common notion is, that much depends, as I have indeed before mentioned, on the hardness of the food; and it is a common saying, in order to show off a horse which is in condition, "that he has plenty of hard meat in him." Now this is a very silly and erroneous idea, if we inquire into it; for, whatever may be the consistency of the food which is taken into the stomach, it must, before the body can possibly derive any substantial support or benefit from it, be converted into chyme—a pultaceous mass, and this, as it passes onwards from the stomach into the intestinal canal, is rendered still more fluid, by the admixture of the secretions from the stomach, the liver, and the pancreas, when it becomes of a milky appearance, and is called chyle. It is then taken into the system by the lacteals; and in this fluid, this soft state, and in this state only, mixes with the blood, and passes through the circulating vessels for the nourishment of the system.

Now if the hardest of the food must in this manner be broken down and dissolved before it can really enter into the system, it must appear evident that something approaching to this solution, if done artificially, would greatly aid the organs of digestion in this process, and that thereby much exertion might be saved to the system, and at the same time nourishment would be rapidly conveyed into it. It is with this view that I would recommend the general adoption of cooking food for horses.—*Edinburgh Quarterly Journal of Ag.*

HOVEN IN CATTLE.

I beg leave to add here some observations to the paragraph in 3d number of the Farmer and Gardener, headed, On the swelling of cattle.

They also in Germany make use of the knife in this disease; but in a less dangerous way, and with better success. It is done with an instrument, called the *Troicar*, a thin and sharp pointed iron in its scabbard, which is pushed into the noted place, then the iron is withdrawn, but the scabbard remains in the wound, for the escape of the gas; it may even be kept there for some time to prevent the new formation of the gas, this is the great advantage of the iron over the knife, on account of the immediate contraction of the wound, following the use of the knife.

Another well approved means, which is accompanied by no danger, and which every farmer may easily prepare and provide for use, is the following: Take a few crude lime stones and burn them, then pound them while they are glowing hot, and put the flour, before it can be impregnated with the air gas, into a bottle, and cork it well to prevent the communication of the external air to the lime. In case of a swelling, put a teaspoonful of the same into a bottle with a pint of warm water, shake it and give it to the sick animal, which immediately will be restored. This means is based upon chemical principles in absorbing the fixed air, (the gas) by the alkalies.—*Farmer and Gardener.*

Profits of the Mulberry.—A gentleman in New-York, who has devoted much time and attention to the planting of mulberry trees, gives a statement from two acres, which divided, will give the following for one acre.

One acre of ground fenced by mulberry hedges and set out with trees,	$250 00
Interest and additional expense during five years,	187 50
	$437 50

The acre will then produce—From 5 to 10 years, 10 per cent, from 10 to 15 years, 47 per cent, from 15 to 20 years, 112 per cent, averaging nearly 45 per cent, for the first 20 years, and continued at 112 per cent, afterwards. The culture of silk is becoming so profitable that it would seem advantageous for farmers generally, to give it their attention.—*N. B. Gazette.*

Mulberry trees.—If the growth in France of raw silk be estimated at 3,000,000lb. the quantity of cocoons may be estimated at 36,000,000lb. It is calculated that 10lb. of mulberry leaves will be consumed for the production of 1lb. of cocoons, so that the annual produce of France must be 577,000,000lb, of leaves; and giving to each tree an average annual produce of 10lb., the number of mulberry trees must be above 5,700,000. One ounce of eggs will, on an average produce 100lb. of cocoons An ounce of eggs is calculated to give at least 30,000 worms. The quantity of silk worms annually reared in France cannot, therefore, be less than 10,800,000,000.—*Dr. Bowring's Report..*

Dr. Clarke's Direction to his Son for Avoiding Contagion.—While you are ready at every call, make use of all your prudence to prevent the reception of contagion. Do not breathe near the infected person; contagion is generally taken into the stomach by means of the breath, not that the breath goes into the stomach, but the noxious affluvia are by inspiration brought into the mouth, and immediately connect themselves with the whole surface of the tongue and fauces, and in swallowing the saliva, are taken down into the stomach, and, there mixing with the aliment that is in the process of digestion, are conveyed by means of the lacteal vessels, through the whole of the circulation, corrupting and assimilating to themselves the whole mass of blood, and thus carry death to the heart, lungs, and the utmost of the capillary system. In visiting fever cases, I have been often conscious of having taken the contagion. On my return home, I have drunk a few mouthfuls of warm water, and then with a small point of a feather irritated the stomach to cause it to eject its contents. By these means I have frequently through mercy, been enabled to escape many a danger and many a death. Never swallow your saliva in a sick-room, especially where there is contagion; keep a handkerchief for that purpose, and wash your mouth frequently with tepid water. Keep to windward of every corpse you bury. Never go out with an empty stomach, nor let your strength be prostrated by long abstinence from food. *Life of Adam Clarke.*

Young Men's Department.

[The following brief address to young men was inserted in the Specimen Number of the Cultivator, issued in January, 1834. As this specimen number had but a partial circulation, we comply with the request of a valued correspondent in republishing it.]

"The YOUNG MEN we would especially appeal to. You are destined soon to occupy the stage of public action, and to fill the important stations in society. *Now* is the time to *prepare* for those high duties, as well as for profit and distinction in your business. Your characters are but partially formed, and are yet susceptible, of receiving good or bad impressions, which are to last through life. It is important to you, to your friends, and to society, that these impressions should be for good. We will lay before you rules and examples of the wisest and best men, to aid you in the formation of your characters—to enable you to become intelligent and successful in your business,—useful and respectable in society,—and beloved and happy in your families. Do not object that you have no *time* to read. Few young men labor more hours than did Benjamin Franklin, or are more humble and self-dependent than he was in his youth; and yet Franklin found abundant time for self-instruction; and so indefatigable and successful was he in his studies, that he became one of the most useful and celebrated men of the age. We need not limit the remark to Franklin. Most of the distinguished men of the day have risen from humble stations by their own industry and frugality, and have acquired a great share of their knowledge in the hours not allotted to ordinary business. Your winter evenings are your own, and may be applied usefully. They may be computed at one-fourth of the day, or one entire month in the year. Time is money: and the young man who appropriates this month to the acquiring of useful knowledge, does more to add to his future fortune, to say nothing of his intellectual wealth, than if he received pay for this month and loaned it upon interest. Knowledge is, in another respect, like money: the greater stock of it on hand, the more it will administer to the respectability and enjoyments of life. But knowledge is not to be acquired without exertion, nor is any thing else that is useful in life. It is the labor we bestow in acquiring an object that imparts to it an intrinsic value. It has been well said that 'although we may be learned by the help of others, we never can be wise but by our own wisdom.' It is the humble design of this monthly sheet to excite a laudable ambition to improve the mind as well as the soil. If we succeed in awakening the latent energies of the former, we think the latter will follow as a natural consequence, and our object will be attained."

FROM A FATHER TO HIS SON.—No. 2.

EDUCATION.

There are few terms of more indefinite meaning than the one which heads this letter. Some suppose it consists in learning to read, write and cipher; while others contend, that no young man can be deemed educated, or at least *well* educated, until he has been dubbed *A. M.* at the college, has passed a term at some academy, or has become a licentiate in one of the learned professions. My definition varies from both, and comprises more than either. I define education—*a knowledge of our religious, moral, political, social and relative duties,*—AND THE HABITUAL PERFORMANCE OF THEM. The apprentice, who has merely acquired the names of the tools which belong to a trade, may as well be deemed to have learnt that trade, as the boy to be educated, who has merely obtained school instruction. The tools are the means by which the apprentice, by attention and industry, is to acquire a knowledge of the trade, and his reputation as a mechanic will depend upon the fidelity and skill with which he employs them. Schooling is to the mental what tools are to the physical powers—the *means* of becoming useful to one's self, and to society at large;—and in both cases success and distinction are wisely made to depend upon individual exertion. The *boy* may acquire the mechanical art, but the noblest powers of the mind are seldom developed but in *manhood.* Thus you perceive that I consider your education as having but commenced; and that you have yet to learn, by study and reflection, those high duties of manhood which are to have an intimate bearing upon your future happiness and prosperity. Your mind has yet to be disciplined, by reading, observation and reflection, and your habits are yet to be fixed. Practice is as necessary in this as it is in mechanics—it is as necessary to make a fluent orator, or a graceful writer, as it is in cutting well a coat, or shoeing a horse. To stimulate you to the performance of duty and to deter you from habits of sloth, indolence and vice, I here venture to assure you, as a conviction growing out of half a century's experience and observation,—that the practice of every virtue will bring its reward, in one shape or another—and that indulgence in vice, will as assuredly be followed by some corresponding suffering, in mind or body. We enjoy animal propensities in common with the brute creation;—but the higher feelings—the moral sentiments,—the pleasures of intellect,—belong peculiarly to man—and man rises in the scale of beings in proportion as he cultivates and improves these peculiar gifts of his Creator.

THE NECESSITY OF GENERAL INTELLIGENCE IN A FREE GOVERNMENT.

When the people govern, they should be virtuous and intelligent. They should be not only willing to obey the laws, but competent to make them. The very foundation of a republican government is based on good morals, and a general diffusion of knowledge among the whole people. Knowledge is not only essential to the prosperity of a free government, but absolutely necessary to its existence; it is at once the vital principle and the sustaining power. The experience of the past has told us, that wherever there has been mental and moral light, there has been liberty; and wherever the people were ignorant, there was slavery. Since this is so, ignorance, which might be a misfortune in another country, is a crime in this; especially, since the means of knowledge are within the reach of every individual. In this republic, the intelligence of each individual is the depository and defence of his liberty. The free institutions of the United States are not secured by armies, revenues or constitutions; but by universal education. The education of the people stands in the place of armies, bulwarks and a throne. Knowledge and virtue are not only power and happiness, but they are "*liberty.*"

In the first place, knowledge is necessary to *perceive the nature and value of literary and civil institutions.* The half-educated may know enough to desire these, but not enough to respect and sustain them. The illiterate cannot see the nature and object of literary institutions, which are to liberate the mind, and raise the intellectual and moral condition of a nation—to increase the necessaries, and furnish the elegancies of life; and to let man feel and know the greatness of his nature. This can be known by those only who have felt the power, and tasted the pleasures of knowledge; and such institutions can be established and sustained by those only who can estimate their exalting influence. The nature and value of civil institutions, the educated will much better understand and honor. A high degree of knowledge is requisite to see the nature and necessity of civil government Man's weakness makes society desirable, and his wickedness makes government necessary. This government he supports to protect his life, his property, and his natural rights. The great object of government is to preserve order and distribute justice. The intelligent can estimate the value of such a public check and judge; for they can see the consequences of the selfishness and maliciousness of men.

Men, living in a civil government, have natural and civil rights; and knowledge becomes necessary *that they may know when justice is administered.* And, in the first place, men should know what their rights are; how many of them they have surrendered up to the general government, that they may enjoy its protection and the advantages of society; and what rights they have retained, and of which nothing should deprive them.

Having learned their rights, they should know whether or not they were respected by their rulers. When there is fraud and injustice on the part of those who govern, the governed should be intelligent enough to know it, and able to defend themselves. The natural love of power, and the extreme selfishness of man, should excite him for preparation to judge of those who are in office, and have the opportunity of gratifying these oppressive principles. Respect and obedience are due to those in office, for they are the guardians and ministers of that government which has been established for the promotion of human happiness. But corrupt rulers may forfeit their claims by personal wickedness and public injustice; and if this should take place, the public should be able to perceive it, and stop the abuses before their liberties are in danger.

On the other hand, the half-educated know not when their government is well administered. They are discontented and clamorous when they have their rights, and all the blessings of a well-ordered administration. They know not the value of the privileges they enjoy, and are always ready for a change in their rulers. They see not the excellencies of their civil institutions, and do not feel respect enough for them to preserve them. In a government where the people not only make the laws, but select those who are to administer them, there is the most imperious necessity for high intelligence and moral worth in every individual. The people should well understand their government, and be qualified to know that it is ably and justly administered; or whether it is not made the instrument of gratifying the ambition of the few, and of destroying the rights and of oppressing the many. The people should be educated to know whether or not they are restrained by any law which does not conduce to the greatest private and general good. The people may see evils, but they ought to be able to take that general view of the whole which would show them advantages (if there were such) which more than overbalance these evils.

In this government, justice is very often administered by a jury: and as this jury is taken from among the people, all should prepare themselves for being called upon to apply the law, and judge of the rights of their fellow men. In the inferior courts of justice, the people are the judicial as well as the legislative part of the government. These important offices demand intelligence in every citizen. When those who are to be chosen for jurors are known to be ignorant or corrupt, dishonest individuals will claim the rights of others, and hope, through the known imperfection of the jury, to obtain those unjust demands which they are certain that right and the law would deny them. Thus, the ignorance of man may be the loss of their rights, when they themselves are to be judges. It is desirable, too, that there should be general intelligence to ensure uniformity in jury decisions; for nothing excites a spirit of litigation more than uncertainty. When men differ, they should see the certainty of the decisions of the law. Again, the laws were made to keep men honest. If they are disposed not to be so, the law may compel them. It hence becomes necessary to know when we should ask assistance from the laws, or, in other words, when litigation is necessary and justifiable. To judge correctly in this, we must know what our rights are, and how far the law may assist us in securing them; and this presupposes general information, obtained only by much study and reading; but which all may get if they will avail themselves of all the means of knowledge which may be obtained.—*Taylor's District School.*

THE CULTIVATOR—DEC. 1835.

TO IMPROVE THE SOIL AND THE MIND.

AGRICULTURAL CONVENTION.

It will be seen, by the notice inserted in to-day's Cultivator, that an Agricultural Convention is proposed to be held in Albany, on the second Monday in Feb. next. The notice has appended to it the names of many highly respectable citizens, to whom the proposition was submitted—enough to give to it all the weight and consequence which is desirable in a preliminary measure. This is the era of conventions; and when their object is praiseworthy, they are seldom otherwise than beneficial. They tend to bring about a concert of action, and to concentrate the energies of many for the accomplishment of a common good. And if the agricultural community can in this way do any thing to advance *their* interests, we may rest assured that the *state* will be benefitted, so intimately is the prosperity of the first identified with that of the latter. The discreet farmer must graduate the extent of his purchases from the merchant, manufacturer, &c. by the nett profits of his farm. If we can double these profits, as we feel assured may be done, the other classes of society will be correspondingly benefitted.

There are many topics which present themselves as worthy the consideration of an agricultural convention, and in which the whole community have a deep interest. We will endeavor to point out some of the more prominent ones.

1. *The establishment of a School of Agriculture.* "It remains to us," says Chaptal, "to improve agriculture by the application of physical science. All the phenomena which it presents, are the consequences necessarily resulting from those eternal laws by which matter is governed; and all the operations which the agriculturist performs, serve only to develop or modify these causes. It is, then, to the acquisition of a knowledge of these laws, in order to calculate their effects, and modify their action, that we ought to direct our researches." These laws relate not only to the organic and ponderable matters with which we have to do, as animals and vegetables, earths and manures, but to light, heat and moisture, which exercise a controlling influence over animal and vegetable life. "Discoveries made in the cultivation of the earth," it is well remarked by Davy, "are not merely for the time and country in which they are developed, but they may be considered as extending to future ages, and as ultimately tending to benefit the whole human race; as affording subsistence for generations yet to come; as multiplying life, and not only multiplying life, but likewise providing for its enjoyment." And if the sciences, as is often asserted, are worthy of our ardent pursuit, merely on account of the intellectual pleasures they afford—"by enlarging our views of nature, and enabling us to think more correctly with respect to the beings and objects around us,"—how much more worthy are they of our regard, when employed to multiply the products and profits of human labor—to increase the comforts and happiness of the human family. But it is not desired to make mere scientific farmers, but intimately to blend the practice, and the *best* practice, in all the departments of rural labor, with the theory, and to test and correct the one by the other. In the plan of a school which has been partially promulgated, it is set down as an indispensable rule, that during the seven farming months, both teachers and students shall devote at least one half of the time to the *practical* labors of the field, the garden or the mechanic's shop. The plan has been objected to on the ground, that few, comparatively, can become its inmates. The same objection exists to all our higher literary schools: not one individual in five thousand receives instruction in our colleges; and yet it would subject one to ridicule to contend, that these colleges do not exercise a highly salutary influence, indirectly, upon the best interests of the community. So of our canals and public improvements; they do not directly benefit property where ample

facilities of commercial intercourse previously existed—they have in fact comparatively and seriously diminished the value of real estate in some districts; yet no one doubts their utilily to the community at large. Besides should the predictions of the usefulness of an agricultural school be verified, schools of the kind can be readily multiplied.

The pupils of an agricultural school would not only carry with them into business life, those principles of science and that general knowledge which would be calculated to improve our husbandry, and to add to the stock of general knowledge—but they would carry with them, and disseminate, *practical* knowledge in all the departments of agricultural labor. They would carry with them a knowledge of the various breeds of farm stock, of their relative value,—of the diseases to which they are incident, and the methods of treating them, when well or sick—a knowledge of the nature and proper management of different manures—of the principles and methods of draining and irrigation—of the principles and value of alternating crops—of the best varieties of fruits and culinary vegetables, and the modes of propagating, cultivating and preserving them—a knowledge of all new plants, profitable in our rural culture, method of treatment, the soils to which they are adapted, and mode of preparing for market—of the leading principles of mechanical science, highly essential in the construction and management of farm implements. They would carry with them, also, habits of application and reflection—hands inured to labor, and minds imbued with light and truth, and animated with an ardent desire to obtain distinction for usefulness. The example of a *good* farmer exerts a magic and benign influence upon all around him. *His* light is not hid under a bushel; but shines forth to illuminate and instruct all who are within its influence. Who will set bounds to the benefits which would result from annually locating one or two hundred *such* pupils in various parts of the state.

2. *The standard of instruction in our common schools should be raised, to fit the pupils for the high duties and responsibilities of freemen, and to aid them in their future business of life.* This is required, as well by political and moral considerations, as by a desire to keep pace, in the arts of labor, with the improvements of the age. The preservation of our civil rights depends upon the intelligence and independence of the middle class of society—the pecuniary prosperity of our state upon their habits of profitable industry. It is in our common schools that we are to lay the foundation of this intelligence and independence, and to inculcate principles and habits of useful industry.

The reports from our penitentiaries furnish us with two remarkable facts, viz. that of 180 convicts in the Connecticut state prison, "*there is no one who, before his conviction, could read and write, and who was of temperate habits, and followed a regular trade*"—and that "*there never has been, in that prison, a convict who had received either a collegiate or classical education.*" Volumes could not enforce more strongly the propriety of adopting a high standard of common school instruction, nor urge stronger considerations for multiplying incentives to honest labor. These matters come within the special province of the agricultural class, who must from their numbers and influence give the impress to our character so long as our freedom shall survive. How little is now done in our common schools to instruct the boy in his future business of life, or in his civil rights and responsibilities.

The importance of the middle class of a population, under a free government, is forcibly shown in the following extract, which we make from Sismondi's History of the fall of the Roman empire.

"But one effect," says this historian, "of the long duration of states, and of their extended power, is, to separate the inhabitants into two classes, between whom the distance is constantly widening, and gradually to destroy the intermediate class, together with which all the social virtues are gradually uprooted and annihilated. From the time that this gulph is once opened between the two extremes of society, every successive revolution does but contribute to widen it; the progress of wealth had been favorable to the rich, the progress of distress favors them still more. The middle class had been unable to stand the competition with them during prosperity; in adverse times it is crushed under those calamities which only the wealthy can stand against. The corruption of Rome had begun from the time of the republic, *from the time that the middle class ceased to impress its own peculiar character on the whole nation*; this corruption increased in proportion as the intermediate ranks disappeared; it was carried to the highest pitch when the whole empire consisted of men of enormous wealth, and populace.

"It is, in fact, in the middle classes that the domestic virtues,—economy, forethought and the spirit of association,—mainly reside. It is in them that a certain degree of energy is incessantly called into operation, either as a means of rising, or of keeping the position already acquired. It is in them that alone the sentiment of social equality, on which all justice is based, can be kept alive. We must see our equals, live with them, and meet them daily and hourly, encounter their interests and their passions, before we can get the habit of seeking our own advantage in the common weal alone. Grandeur isolates a man; vast opulence accustoms each individual to look upon himself as a distinct power. He feels that he can exist independently of his country; that his elevation or his fall may be distant; and, ere long, the servile dependents, by whom a man who spends as much as a petty state is sure to be surrounded, succeed in persuading him that his pleasures, his pains, nay, his slightest caprices, are more important than the welfare of the thousands of families whose means of subsistence he engrosses.

"The morality of a nation is preserved by associating its sentiments with all that is stable and permanent; it is destroyed by whatever tends to concentrate them on the present moment. So long as our recollections are dear to us. we shall take care that our hopes be worthy of them; but a people who sacrifice the memory of their ancestors, or the welfare of their children, to the pleasures of a day, are but sojourners in a country—they are not citizens."

3. *A portion of public money may be usefully applied in aid of county agricultural societies, to call forth talent and to excite industry.* Of the salutary effects of premium rewards, for skill and enterprise in agricultural improvement, we have testimony enough in the experiment which our state made in 1817, and which is yet exerting a beneficial influence among us. We see it confirmed also in the states which surround us, some of which have for a long time been liberal of their funds to this object, while others, yet in their infancy, have recently began to copy the provident example. There is no country which has made greater advances in improved husbandry, during the last fifty years, than Scotland, and there is none perhaps which now excels her. Her agricultural society has been in existence about fifty-one years, and in that time has distributed, to the tillers of the soil, premiums to the value of about half a million of dollars. The value of her agricultural products has been augmented, in the mean time, several millions annually. Who will deny, that her premiums have contributed largely to bring about this wonderful improvement in Scotch husbandry. The remarks of Chaptal upon this subject, inserted in our October number, are so pertinent and forcible, that we beg leave to refer to them, as further illustration upon this head.

4. *We want better common roads.* The existing laws are defective, or they are not faithfully executed. Nothing tends so rapidly to improve and enrich a district, as good roads. The profits of agricultural labor, as well as the stimulants to industry, are increased by every new facility for transporting its products to market. The attention of our legislatures has been so much engrossed by party politics, private claims and monied incorporations, as to leave little time to deliberate upon the matter, and to digest a better system. In truth, a goodly portion have been strictly political or professional gentlemen, whose study has been more to improve *the road to office*, and the *road to preferment*, than the common roads of the farmer. Plans of improvement have been suggested, and we are advised that some of these will probably be submitted.

5. We have a formidable enemy in the *Canada thistle*, which it requires the united efforts of all landholders to put down, aided by legal penalties. Lastly.

6. The serious depredations of the *Grain-worm* upon the wheat crop of some districts, and the apprehended danger, that it will extend itself over the state, is a matter highly worthy the consideration of an agricultural convention.

We have thus suggested some prominent subjects which may engage the attention of an agricultural convention, of manifest importance to the farmer and the public. Whether all or any of them will be discussed it is not our province to say. And we will

close our already too protracted remarks, by calling upon the agricultural interests in the several counties to weigh the matter with all deliberation, and if they concur with us in the belief, that much good may result from the proposed meeting, to give it their cordial and efficient support. We would in particular address those who are just entering upon the stage of business life—who are anxious not only to acquire fortunes, but reputations for public usefulness, and who are to give a character to our agriculture in coming years. "Nothing," said an ancient sage, "can be more despicable than an old man, who has no other proof of having lived long in the world than his age." "It should be the object of our ambition that we should all signalize the period of life allotted to us, by some exertion, either mentally or bodily, which may be useful to mankind, and give us a claim to their remembrance, to their respect, and to their gratitude."

Agricultural Fairs have diminished in our state, while they are increasing in number and interest elsewhere. The states of Massachusetts, Ohio and Indiana, and we believe some other states, have made liberal provisions for these fairs from the public treasury. In Massachusetts, most of the agricultural societies have a permanent fund, the interest of which only is annually expended. The fund of the Worcester county society amounts to $8,000, mostly in bank stocks, which gives them an income of five hundred dollars a year. The distribution of this sum annually in the county, in exciting emulation, and in rewarding rural skill and industry, has done much there, as it would be likely to do every where, to increase individual wealth and comfort, and thereby to promote the public prosperity.

It seems now to be reduced to a certainty, that agricultural fairs cannot be sustained in New-York, with any degree of usefulness, without the efficient patronage of the legislature. It is for the farmers themselves virtually to decide, whether this patronage shall be had: for we have little reason to doubt the disposition to grant, what the unequivocal and expressed wishes of the yeomanry may ask on this head. We repeat, that there is *now* no diversity of opinion as to the benefits which have arisen from former appropriations. We are yet young in agricultural improvement. We have no doubt the products of our soil may be doubled, with the laborers which it now employs. This would soon add millions to our wealth, while an annual appropriation from the treasury would return to it compound interest in the form of increased revenues.

EXPERIMENTS.

In our farming operations of the past season, we have made some experiments rather out of the ordinary routine of practice, the results of which we here state, for the benefit and admonition of others.

1. We drilled in half a pound of ruta baga seed between the rows in a field of corn, after the last dressing. On harvesting the corn, about the 13th Sept. but a few drawn plants of the ruta baga were found. The corn stood well and stout, 3 by 2½ feet, and pumpkin vines covered the surface. The turnips did not fail for want of nourishment in the soil, but from the absence of heat, light and air, to elaborate this food, and to produce a natural development of the plants.

2. We drilled buckwheat between rows of China beans. We lost more in the bean crop than we gained in the buckwheat. The beans did not mature and ripen well.

3. We sowed half a pound of Aberdeen turnip seed, broad-cast, upon half an acre of corn, after the last hoeing. The corn having been replanted, and yet thin, from the devastations of the worm, was not cut up till about the 25th Sept. On the 10th Nov. we gathered 70 bushels of good turnips, many small ones being left, the crop not having been thinned.

4. Manured 100 rods, or five-eighths of an acre, of one year ley, from which the clover had been mown the last of June, ploughed, harrowed, and drilled in half a pound of ruta baga seed, on the 4th July. The after culture consisted of two dressings, with cultivator and hoe, at the first of which the plants were thinned to 8 or 10 inches in the drill. The crop was taken up the 18th Nov. and the product was 350 bushels. The ground and crop were measured. The seed was drilled in by a bungler, who made the drills too distant, often four feet. At regular intervals of 2½ feet the product would have been at least 100 bushels more. This practice is not new, nor is the product great; but the result is given to show the profits of *root* culture. The expense of curing the clover, of 12 loads manure, and of cultivating, harvesting and securing the turnips for winter, I estimate at $18. The product of the 100 rods may be put down as follows:—

1 ton clover hay,	$15 00
350 bushels ruta baga, at 1s. 6d	65 62½
Tops, say	1 00
	81 62½
Deduct charges,	18 00
Profits,	$63 62½

5. We burnt a strip of wheat stubble, first scattering upon it some light straw, sowed upon it the seed of the white turnip, and harrowed it in thoroughly, the 4th August. The plants were thinned with the hoe, and we gathered a fair crop of handsome table turnips.

6. We mixed pumpkin seed profusely with our seed corn. Where the corn stood well, the pumpkins were tolerably productive; where worms thinned it they grew in great abundance. We gathered from seven acres more than forty cart loads. With these, our small potatoes and refuse apples, boiled together, and soft corn, we have put fourteen porkers in good condition for the barrel, and have enough in store to keep them thriving till the middle of December. We thus expect to make 3,000 lbs. of pork from the refuse matters, which every farm may be made to produce, and which are not marketable commodities. We put down the saving in these matters as a prominent item in the profits of a farm.

CUT-WORM.

The ravages of this insect last spring, particularly in our corn fields, gives an importance to every suggestion which may promise a preventive. The remedy suggested below has the sanction of philosophy as well as experience, and promises the further benefit of being decidedly beneficial to the growth of the corn. The labor and expense of making the application are comparatively trivial. It is probably the caustic qualities of the alkali afforded by the ashes and lime, that kept the worm from the circle of its influence, or destroyed it. We copy the article from the *Tennessee Farmer*. It seems to have been penned by its intelligent and practical editor, Judge Emerson.

"As soon as the corn is covered with earth, let a hand follow, having a bag hanging at his side, containing ashes and plaster mixed, one-third of the latter, and two-thirds of the former, or ashes alone, either leached or unleached—the latter would probably be preferable—and let him drop a handful on each hill of corn. We would recommend, where it can be obtained, the partial substitution of lime for ashes, in which case, to preserve the hands of the dropper from injury, it will be necessary for him to use a cup, shell, or gourd, with which to take up the lime—each bag should be large enough to contain as much of the substance used as the dropper can conveniently carry. We request our readers in this vicinity to give the foregoing a fair trial, and to furnish us with an accurate account of the result, both as to its effects in preventing the ravages of the Cut-Worm and in increasing the crop. In our use of ashes and plaster, they were dropped on the seed corn, and covered with it. The effect on the crop was decidedly and greatly beneficial. For preventing the ravages of the Cut-Worm, there is good reason to believe that it would be best to deposite the ashes on the hill after the corn is covered, and this mode will probably be found nearly, if not quite, as beneficial in increasing the crop."

Large Vegetable Productions.—The newspapers teem, as is usual at this season, with statements of the extraordinary weight of vegetable monsters. We are too apt, in judging of both vegetable and animal productions, to let our wonder outrun our reason, and to graduate value according to size—when in truth, as a general rule, the larger productions are of a quality inferior to those of medium or inferior size.

Take, for instance, among roots, the potato: the very large varieties will be found to be coarse, watery and comparatively devoid of flavor and nutriment. So of the *very* large beet, radish or pumpkin—who eats them? The farm stock only. In fruits as the apple, pear and plum, most of the fine flavored and esteemed varieties are of dimunitive size. The remark, too, will pretty generally apply in regard to animals: the *very* big are seldom models of beauty or sources of profit.

GREAT PRODUCTS IN OHIO.

Scioto Valley against the World.—N. W. Thatcher, Esq. secretary of the Agricultural Society, has handed us the following statement. It contains striking illustrations of the fertility of our soil, under skilful culture:—

"*One hundred and fifty-four bushels* of corn, *actual liberal measure*, was produced the present season on *one measured acre* of ground, selected from a field of twelve acres, all equally as good, on the farm of Mr. George Renick of this vicinity. Mr. Felix Renick produced *eighty-five and a half bushels* of oats on an acre of ground: the seed of which he recently brought from England. The oats weigh about twelve pounds to the bushel more than the common oats of this country. Mr. Daniel Materia of this place, raised in his garden, Cauliflowers of most extraordinary size, measuring from 29 to 33 inches in circumference, and weighing three pounds ten ounces in *one solid head*. And a stalk of corn, in the garden of Mr. Peter Douglass, produced *eight good ears of corn!*"—*Chillicothe Adv.*

"*Premium Corn.*—The premium was awarded to Mr. Asahel Renick, by the Agricultural Society of Pickaway county, on Monday last, for the best acre of corn. ☞ *One hundred and fifty-seven bushels and one peck!* Let those who can, beat that. We learn from the president of the society, that the corn was planted in hills, a little more than three feet asunder, and received no more than the ordinary cultivation. So much for Darby creek *bottoms*. We were gratified to observe an increased interest in the society, manifested on the part of the farmers of the county."

Estimating the cost of culture at $15 per acre, and the price of corn at fifty cents per bushel, the growers of the above corn crops realized a nett profit of $62 per acre. We are not sure that the valley of the Hudson can compete with the vallies of the Scioto and Darby creek, but we *are sure* that eighty bushels of corn per acre can be raised here, on proper corn ground, *without extra expense*: and this, at present prices, affords a profit of $65 per acre.

Yield of Carrots.—Mr. Wilson, of the Albany Nursery, sowed last spring, a piece of ground 111 feet in length, and 39 broad, with carrots, in drills 18 inches apart. The product was 6,321 pounds, topped and freed from dirt. This is at the rate of about 31 tons, or 1,030 bushels of 60 pounds each bushel, per acre. The ground was first trench ploughed, then well dunged, and ploughed again; unleached ashes were then spread upon the ground at the rate of fifty bushels the acre, the ground well harrowed, and the seed sown.—The plants were thinned to six inches. Mr. Wilson thinks it would increase the crop, to sow in drills at two feet, and that in this case, the crop might be cleaned principally with the cultivator, particularly with Van Bergen's.

Carrots are fine food for all farm stock, and are particularly beneficial to horses, and are considered to be worth for this purpose, as much per bushel as oats. At three shillings per bushel, a thousand bushels would be worth $375.00. They are worth at least half this for any kind of farm stock, which would still make them a *very* profitable crop.

Mr. Brewster's Experiments.—The communication of Mr. Brewster will be read with interest. The great secret of his success, we trow, is to be found in the *manure*—the food upon which his crops fed and flourished. Mr. B. has made no charge for this in his expenses; we do not know the reason of this, except that he *saved* it, while his neighbors *wasted* theirs—a practice too common. In travelling in Otsego and Schoharie, and seeing the large piles of manure which were rotting—and rotting—in the barn yards, we thought of the fine corn, and potatoes, and ruta baga which these piles might produce, if they were used as Mr. Brewster used his manure. But we saw not there but few if any crops like those of Mr. B.; and had this gentleman left his dung to waste in the yard, we venture to say we should have had no statement from him of his abundant crops.

We do not expect to learn old birds to sing, or to persuade the old farmer to forsake the footsteps of his father—yet we would have him look abroad, and have the candor to admit, that the old way is not always the best way—that agriculture, like every other branch of labor, is constantly undergoing improvement. If he has sons, and has a regard for *their* welfare, he *must* wish them to learn how to turn their labor to good profit. The experiments of Mr. Brewster alone are worth much to the young men who are ambitious to improve; and the agricultural papers are filled with such information. We have seen hundreds of farms with meagre starved crops, which might have produced as fine crops as Mr. Brewster's, had the manure been saved and judiciously applied. We thank Mr. B. for the service he will render our young farmers by this communication. We advise every young farmer, who is sensible that he has a head capable of assisting his hands, to peruse the Cultivator or some other agricultural paper.

Apple Pomace.—On a late visit to the town of Marlborough, in Ulster county, we found that the Mess. Hallocks, very intelligent and extensive farmers, and withall great cider manufacturers, were husbanding their apple pomace with great care, and feeding it to their milch cows. They begin with small feeds of it, and find that it adds greatly to the quantum of milk. The Mess. Hallocks manufacture their refuse pippins into cider separately, and if the liquor does not retain the peculiar flavor of the fruit, it gives a rich and racy liquor which commands the first price in market. When we practice making cider from a single species of fruit, and that species affording a rich must, we shall treble our quadruple the value of this product of the farm.

This town of Marlborough, by the bye, has undergone, and is undergoing, important changes in the productiveness of her lands. Thirty years ago, when we first knew it, it was one of the poorest towns in the county: its agricultural products were trivial, and its wood-drawing population had much ado to make their ends and means meet. It now verifies the remark that we have often made, that where nature has done least, industry and skill are most active, and most successful, in maintaining good habits and good morals. There is no stimulant so salutary as the habit of depending upon one's own exertions. Farmers in fertile districts, like the sons of wealthy parents, seem to be content with the bounties which Providence has alloted to them, without heeding or profiting from the improvements which art or industry are every where making around them. The common schools of Connecticut, since the state has provided bountifully for their support, are said to be rapidly declining in character: the people *lean* upon the state—they neglect their own interests and duties, from a reckless hope, that others will perform for them what they can only properly do for themselves. Fifty years ago the fertile flats in several of the towns of Ulster, exhibited patterns of profitable husbandry and of tidy neatness and comfort. But the sons have been living upon the fame of their fathers. Their lands have deteriorated under old exhausting practices—and they have been virtually standing still, while around them, where nature has been less kind, industry and enterprise have been carried into action, and improvement has progressed. Thus while in the once fertile towns, the products and profits of agriculture have been stationary or retrogading, they have been more than quadrupled in the now thriving town of Marlborough. These facts suggest an admonitory lesson to those who are flying to the fertile west in anticipation of all the choice pleasures of life. Our habits, more than the soil we till, influence our happiness; and where incentives are lacking, and we are afraid they will be lacking in the west when the country becomes filled with population, to industry, economy, and the other social virtues, society, we fear, will become lax, and the enjoyments of life be blended with more than an ordinary share of evils.

The Sap of Plants.—It is a received opinion among the unlearned, and even some of the learned, that all the sap of the trees decends to the roots in autumn, and remains till the genial influence of spring causes it again to ascend. This is disproved by numberless facts which come under our observation. "Not only do plants," says Chaptal, "prepare all the juices which are essential to vegetation, and to the formation of fruits; but after having fulfilled those functions, they continue to extract, from the earth, and air, the principles of their nourishment; *these elaborate and deposite between the bark and wood, to serve for their first aliment on the return of spring, till the development of the leaves, and the excitement of the roots by heat, can provide for their nourishment by the absorption of foreign substances.*" The volume and fluidity of this elaborated sap are diminished, in winter, by the absence of heat and by evaporation.

The West—far West.—We have received from *Galena*, a town hardly yet noticed in our gazetteers, so recent being its name and settlement, situate near the banks of the Mississippi, 480 miles north of St. Louis, TWENTY DOLLARS in payment, in advance, and a portion of it *four years*—for the Cultivator. We note the fact for the double purpose of showing the advance of population in the far west, and of suggesting the example to subscribers who find it inconvenient to transmit a single years subscription. The Cultivator will continue to be published, we trust, without any diminution of character for usefulness. Our correspondent says, in concluding his letter—

"You may expect additions to this list, as many persons in this young and prosperous settlement, prefer to read useful works, and attend to their own business, rather than to pay for, and read, slanderous publications, and attend to other people's concerns."

We gave in our last, a communication from Mr. Burrows, detailing the uncommon fertility produced by the wool tags and other refuse of a woollen factory. We have another remarkable fact to narrate, in corroboration of Mr. B.'s statement:—Mr. Hubbard, of Middletown, Conn. informs us, that he cut *fifteen* tons of hay from three acres of land, at one cropping, which had been brought to this state of fertility, from a low condition, by the sweepings of his woollen factory. Bets having been made by his neighbors on the amount of the crop, the whole was accurately weighed. Mr. H.'s profit at this time, may be estimated at $100 per acre—a handsome return for Yankee industry. Chaptal pronounces this manure the most valuable that can be employed.

MAMMOTH PRODUCTS OF A MAMMOTH DAIRY.

We called to see the extraordinary cheeses from the dairy of Col. T. M. Meacham, of Oswego county, when they were exhibited in town. There were ten, weighing in the aggregate nearly 8,000 lbs. and surpassing in magnitude any thing of the kind we had before seen, or read of. One, weighing more than 1,400 lbs. is destined as a present to the President of the U. States. The others, weighing 700 lbs. each, have inscribed upon them, severally, the names of cities, public bodies and individuals, that is to say—the Vice President of the United States, the Governor of the State of New-York, the Congress of the United States, the Legislature of the State of New-York,—the Cities of New-York, Albany and Troy.—the Hon. Daniel Webster, &c. The cloth cases which severally enclose these monstrous productions, are tastefully decorated with mottos, inscriptions and paintings, and they are transported in boxes made to fit them. The proprietor is desirous of receiving contributions to remunerate him somewhat for his expense and labor, in which we hope he may prove successful, and to present the cheeses according to the inscriptions upon them, *in behalf of the people of the state of New-York*. We highly commend the enterprise of Col. Meacham, yet we confess we cannot exactly applaud the manner in which it has been displayed.

The advantages of a farm upon the Hudson are particularly illustrated by the fact, that a farmer in our vicinity has sold his surplus crop of hay, recently for $4,000, destined for the *New-Orleans market*.

CORRESPONDENCE.

CORN—POTATOES—RUTA BAGA.

Trenton, Oneida Co. Nov. 1835.

Dear Sir—Agreeable to your request, when I saw you in May last, I herewith transmit to you the result of some experiments, I at that time contemplated making, particularly in the growth of Indian corn, potatoes, and ruta baga turnip. This section of country is celebrated for grass and grazing, and most of our farmers have embarked in the dairy business, under a belief that the soil and climate is unfavorable to the growth of all kinds of grain excepting oats. This being the second year that agricultural business has occupied exclusively my attention, my operations as yet are small.

I had a ten acre lot of stiff, strong sward, that had not been ploughed for many years; this I intended turning over chiefly for Indian corn; in one corner of which I measured off one acre for corn, and by the side of it, one other acre for potatoes, drew on about twenty loads yard manure to the acre, on each, turned it over, following the plough with the roller, harrowed and furrowed it three feet apart from north to south, put down about the same quantity of manure in the hills that was turned under. Commenced planting corn 20th May, seed soaked, rolled in tar and water and plaster: put down 4 grains in a hill, one foot apart; we planted the first day about one quarter of an acre, which came up well, the rest was planted on the 22d and 23d, and owing, as I thought, to the seed laying too long in the hot sun after being soaked, before it was planted, did not come up scarcely one hill in a row: we replanted on the 2d and 3d June, which came up well.

In consequence of the late planting and the unfavorable season, I long since abandoned the idea of obtaining more than a common crop. It however, grew well; we gave it two good dressings with the cultivator and hand hoe. On the 6th Sept. we had a frost that checked its growth, and on the nights of the 12th and 13th Sept. were killing frosts; while it appeared to be in full bloom, on the 14th, we cut it all up by the roots and placed it in small stocks, where it remained until about the middle of October, when we husked it out, taking care to keep the one-fourth acre first planted, by itself. We husked in a large basket holding little more than a bushel. We took from the quarter acre, forty-eight baskets, one of which we spread on the shelves in the milk house, where we kept a fire in a stove, and left it about ten days, then shelled it out, and got 17 quarts 1 pint shelled corn, giving 26 bushels 8 qts. or 105 bushels to the acre. The other three-fourths did not do as well, but taking it together, we got 94 bushels and 2 qts. shelled corn. I would not wish it understood from the above, that I am in favor of late planting, by no means. I am decidedly in favor of early planting, (weather and land permitting.) I would never leave it later than 10th May. Urgent business calling me from home, was the cause of my late planting at this time.

Potatoes.—My potato ground was prepared the same as for the corn and planted the first and second days of June—furrows three feet apart one way, seed all whole and large, put down one in a place, one foot apart; we gave them one good dressing with the plough and hand hoe, which was all that was done to them until harvesting. About one-quarter was planted with the pink-eye, the rest with the orange potato. We took up 519½ baskets weighing each 69 lbs. A fair measured bushel potatoes weighs 64 lbs. By this standard we got 560 bushels as fine potatoes probably as is often taken out the ground. The orange yielded about 8 per cent more than the pink-eye. In no part of my farm did potatoes yield as much by one-quarter, as they did the preceding year; I do not, therefore, consider the yield of 560 bushels to the acre, by any means a large one.

Ruta Baga.—The ground planted was barely sufficient to give a fair trial, less than half an acre, part of it on sward, and part on ground where potatoes were raised last year. Those where potatoes grew the preceding year, were the best. I measured from one end of the patch, twenty square rods, from which we got 154½ bushels, or 1,236 bushels to the acre, 55 lbs. to the bushel. The ground was ploughed but once, threw into ridges about three feet apart, a man sent ahead with a hoe to level the tops of the ridges, following myself with a tin canister with two small holes in it, with the seed in. (And here, in justice, I must acknowledge the receipt of the simple idea obtained from the Cultivator, in a communication in the May number of this year, from William R. Smith, of Macedon, which I consider of more value to me, than many years subscription to the Cultivator.) This canister I shook over the ridge, passing nearly on a common walk; a boy following with a garden rake, to cover the seed, and it was done. The seed came up well—required a little thinning in some places, and filling up in others. I consider the ruta baga a crop which every farmer should raise, particularly the poor man, who keeps but one cow, and hires a tenement, with but one acre of land. Let him set off one quarter of an acre and plant it with ruta baga; with proper treatment, this would furnish his table nearly the year round with an excellent vegetable, and with the aid of a few bundles of straw, winter his cow better than she could be wintered on hay. Mine were planted 7th. June, which in our latitude I think is not too early. I will endeavor to make as near an estimate of the expense of the cultivation as I can, commencing with the corn.

Dr.—Ploughing, harrowing and furrowing 1½ days, at 16 shillings per day,	$3 00
Planting, 4 days' work, at 6s. per day,	3 00
Drawing on 40 loads manure, at 20 cents,	8 00
First dressing with cultivator, half day,	1 00
Six days' work hoeing first time,	4 50
Six days' work second dressing,	4 50
Half day with the cultivator,	1 00
Seed $1, interest on cost of land, $3.50,	4 50
Total,	$29 50
Cr.—By 94 bushels of corn, at 6s.	$70 50
Expenses,	29 50
Profit,	$41 00

I have not taken into calculation the expense of harvesting, considering the fodder to be ample pay.

Potatoes.	*Dr.*
Ploughing, harrowing and furrowing,	$3 00
Planting, 4 days' work, at 6s. per day,	3 00
Ploughing 1 day,	2 00
Hoeing 4 days, at 6s.	3 00

Digging and housing 560 bushels, at $3 per hundred bush:		16 80
Interest on cost of land,.....		3 50
35 bushels seed, at 2s.....		8 75
Drawing on 40 loads manure, at 20 cents,.....		8 00
Total,.....		$48 05
Cr.—By 560 bushels, at 20 cents,.....	$112 00	
Expense of cultivating, &c.....	48 05	
Profit,.....	$63 95	

Ruta Baga.	*Dr.*
Ploughing, harrowing and ridging,.....	$3 00
Putting in the seed, 2 days' work,.....	1 50
2 days' dressing through with the Cultivator,.....	2 00
First thinning and hoeing, 8 days, at 6s.....	6 00
Second do. 8 days,.....	6 00
One pound seed, 8s.....	1 00
Interest for cost of land,.....	3 50
Total,.....	$23 00
Cr.—By 1,236 bushels, at 20 cents,..... $247 20	
Expenses of cultivating, &c..... 23 00	
Profit,..... $224 20	

The tops will pay for harvesting. I am fully of opinion that any land that will grow fifty bushels Indian corn to the acre, will grow five hundred of potatoes, or ten hundred of ruta baga.

Yours, very respectfully, J. W. BREWSTER.

N. B. The soil on which the above crops were grown, was a dark loam with a small mixture of clay, a hardpan underneath, say ten or twelve inches from the surface, and has by the oldest and most experienced farmers in the the neighborhood been considered entirely unfit for the growth of Indian corn.

SHEEP HUSBANDRY.—No. II.

The common sheep of Spain have coarse light fleeces, being worth from 10 to 12 cts. per lb. and reared principally for their flesh.

"The word *Merino* is Spanish, it signifies governor of a small province, and likewise him who has the care of the pasture and cattle in general. The *Merino Mayor* is always a person of rank, and appointed by the king: the duke of Infantado is the present *Merino Mayor*."

The *mayors* have a separate jurisdiction over the flocks in Estramadura, which is called the *mesta;* and there the king is the merino mayor. Each flock consists of 10,000 sheep with a mayor or head shepherd, who must be an active man, well versed in the nature of pasture, as well as in the diseases of his flock. It might be interesting to some to pursue this part of the subject further, but I fear encroaching on the limits of your paper; if it should excite an interest to consult standard authorities and investigation, my present object will be attained.

The word *merino* is now by general usage applied to the fine woolled Spanish sheep.

From the earliest history of Spain, the possession and cultivation of a peculiar breed of fine woolled sheep has been a subject of high national legislation, and although it was carried to an extent greatly oppressive and injurious to some other interests, yet it resulted in preserving and improveing their sheep above those of the whole civilized world.

The origin of the fine Spanish sheep as stated in the preceding number, is yet left for ingenious investigation.

Strabo, speaking of the beautiful woollen clothes that were worn by the Romans, says that the wool was brought from *Truditania*, in Spain. After the conquest of Spain by the Romans, the elder Columella was one of the early emigrants to Spain. For "Spain was at that time highly civilized; and agriculture was the favorite pursuit of all who were not occupied in war." How desirable is it that our country should properly appreciate this great source of happiness, wealth and true greatness.

Mr. Fessier, a distinguished member of the French institute, and who was commissioned to investigate this subject, says, "all that we know of the *merino*, is that they have a long time existed in Spain; the *merino* is a distinct breed of sheep; as in the class of dogs, the Danish dog, the grey hound, the shag dog, the lap dog, &c. And in the same manner as among dogs, the cross breeds may afford individuals more or less approximating to the species, but never the species itself." Another writer says, "the *merino* differs more essentially from every other kind of sheep, than the spaniel does from the mastiff. And yet no one has seen any change in either of those species of dogs in the course of generations, or in any climate, except by intermixture of the breeds. I say the *merino* differs essentially from all other sheep, and even from all other quadrupeds of which we have any knowledge, as an annual does from a perennial plant. All quadrupeds change their coats every year, and indeed generally twice a year; the *merino* sheep never changes his coat; on the contrary, it will continue to grow from year to year, and at the end of the third year the fleece will yield a three years crop, with little or no diminution. This has been tried in France, Switzerland, and England."

Sportsmen, for the purposes of the chase and the turf well understand their business, in breeding the grey hounds, and blood-horses. Will the deliberate scientific agriculturist be shamefully distanced in the comparison of his pursuit with that of play and recreation? Will he rear a cock that will not fight on his own dunghill? Excite an interest, raise a competition, and any subject at this day will be investigated. Let us observe the course which nature treads.

"God never made his works for man to mend."

I would with Franklin conduct the lightning harmless down, but not in folly strive to stay its force.

Mr. Livingston says, "It will be of use to be acquainted with the several breeds of Great Britian and Spain, as a direction to those who may endeavor to import sheep from thence; for though every *variety** of the *merino* is valuable, yet they differ widely from each other in beauty, in form and in fineness of fleece, as may be judged from the prices in Spain, where Leon and Escurial wool sells for 100 cts. while that of Aragon brings only 60 cts. with several intermediate kinds."

The principal flocks of Spain are divided into the (*Transhumanta,*) or which migrate from north to south twice every year, and include the greatest number, their route having been regulated from time immemorial by legislation. The privilege of a route ninety paces wide across the cultivated fields, is claimed and maintained by the government for the passage of the public flocks.

Then the (*Estantes,*) or stationary flocks.

These are next subdivided into several varieties and denominations, originating either in ownership or locality of production, of which the most prominent are the following, viz:

Those of the Escurial convent are altogether the finest and most perfect of any of the Spanish flocks, combining excellence scarcely admitting of improvement.

Those of the duke Infantado and of the countess Nigretti are but imperfectly known in this country.

Those of Monturio and Gaudaloupe, of those brought to this country, rank next to the Escurial in their most essential qualities.

Those of the Paulaur convent. Of all the Spanish flocks this is the largest sheep, elegant in form, and producing the greatest fleece, but at the same time coarse, and abounding in jarr and yolk. He has a large dew-lap extending from the chin to the breast. This wool, though not answering the full requirement of the market, nor meeting the nicety of modern machinery; still however, standing in advance of all crossing with Dishley, Lincolnshire or other mongrel productions, and of all others are the most rugged and hardy, almost answering the requirement of a *sheepman*, who thinks sheep require no care.

I have seen some fleeces of Paulaur bucks highly fed, weighing unwashed, twelve and fourteen pounds.

Besides these there are many other flocks which I shall omit to describe.

The *emigrant merino* will form the subject of the next paper.

F.

* I have substituted the term variety for species.

COMPARISON IN CUTTING UP AND TOPPING CORN.

To the Editor of the Cultivator:—It is a fact of general observation, that the past season has been very unfavorable to the maturing of the corn crop; consequently much of the corn was unripe at the usual time of frost, and as there was a prospect that fodder would be scarce, it became an object to make the most of the corn stalks. With this view, and also to ripen the corn, many farmers topped their corn, while others cut it at the ground. To test the comparative merits of these two methods, a part of a field was topped at the

time of the first frost in September, and the rest of the same field was cut off at the ground at the same time, and set up in small stooks, tied near the top. It may be observed that the wire worm cut off the first planting to a very considerable extent, and that all the second planting was nearly or quite unglazed at the time of harvesting,—and for this reason it was supposed that the topping would hasten the maturity of the grain, but far otherwise was the fact. The part that had been topped, when gathered, had undergone fermentation to such a degree as to be quite offensive, so that no creature would eat it; while the other had become partly glazed, and what remained soft, was perfectly white and sweet, and was eaten greedily by swine and cattle; and the difference in the value of the fodder was nearly equal to that in the grain. OBSERVER.

Coxsackie, November, 1835.

NOTE.—The stocks of the uncut corn were succulent, with mostly unelaborated juices,—which, during the warm weather, readily fermented; while in the cut portion the juices were mostly already elaborated, the watery portion evaporated, and much of the nutriment was transfused into the grain.—*Cond.*

GAMA GRASS—INDIGENOUS GRASSES.

Stratford, Conn. Nov. 3d, 1835.

J. BUEL, Esq.—Dear Sir,—In the September number, page 94, of the "Cultivator," you stated that "the *gama grass* is not found growing naturally in Connecticut."* I feel a great interest in the progress or success of the Cultivator, having taken it from the first, and subscribed this year for three copies, two of which were for gratuitous circulation. I take the liberty to correct your mistake, and especially as I am a Connecticut man, I wish Connecticut to claim all her *grassy* as well her civil and religious rights.

I am happy to inform you that the *gama grass* (*Tripsacum dactyloides,*) is growing luxuriantly in this town, from three to five feet high, and is unquestionably *indigenous*, because the owner of the land is unacquainted with the fact that such grass is on his farm, and I believe the land has been in his family for something like a century, and besides, I presume the land was never ploughed. The situation is such, that you could not hesitate to pronounce it indigenous. The grass is now well seeded, and I would send you some of it by mail, but it takes only about one hundred seeds to make an ounce, besides being very bulky. If I have a private opportunity, I will do myself the pleasure to forward you some of the seed.

It was first discovered in this region by H. C. Beardsley, M. D. a distinguished botanist from Monroe, in this state. I should presume from its appearance and habits that it would not be judicious to cultivate this grass on a good soil, because it must be almost impracticable to plough it up, as the roots are as large as the root of the (Acorus calamus) *sweet flag*, and all completely matted together. But as the soil on which it grows is little else than a sand bar, I presume it might be valuable as a coarse grass on a sandy soil, that would produce little or nothing else.

Near to the locality of the gama grass grows spontaneously the *Panicum virgatum*, which is believed to be the *prairie grass* of the western country. It is now well seeded, and about five feet high.

I enclose a few seeds of another kind of grass, (Aristida,) that grows near the same locality. The species is a new one and not known in the books. It was first discovered by Dr. B. The seeds are remarkably curious, on account of the long spiral awns attached to each. The grass is about a foot high, and I presume not very valuable except as a curiosity.

Again, sir: As your paper is useful to the horticulturist as well as the farmer, allow me to suggest the result of an experiment with an accommodating crop of *raspberry vines*.

Gardeners usually find it difficult to perfect any vegetables among them. I have tried potatoes and sundry articles unsuccessfully until this season. I tried as an experiment the old fashioned striped *bell-pumpkin*, used for the table (and by the way the best article after all of the pumpkin kind for the table that I have ever seen, from Patogonia to Quebec.) I planted six hills, putting two seeds in a hill, only seven seeds however vegetated. They were planted so late that they did not begin to run or spread at all, until the fruit of the raspberry was ripe, but began soon after. From the product of these seven seeds I gathered thirty-four pumpkins, the largest weighed twelve pounds, all averaging about eight pounds, total weight was 265 pounds, and they are all, except one, unusually good of the kind.

I planted but a part of my raspberry ground, but the part planted was but a fraction over one rod square. This crop therefore is entirely gratuitous, because it is no more trouble to cultivate the raspberry with, than without the pumpkins; as the new crop of raspberry vines fall upon the ground and cover it, the pumpkin vines rise above them, and thus prevent nearly all other vegetation. If you deem the preceding articles worthy an insertion in your valuable paper they are at your service. I am, sir, respectfully yours,

JAMES H. LINSLEY.

* We stated this as a matter of inference, from the fact, that it had neither shown any indications of seeding, or acquired any growth to make it an object of culture with us—it seemed to belong to another and a warmer climate. We find our opinion, that it is not worth the notice of northern farmers, which is the main point to be ascertained, fully confirmed by the Hon. John Lowell, of Boston, who, in the last Gardener's Magazine, laconically remarks: "I have tried it in all soils. With us it is worthless, as much so as fiorin, which made *two hours* noise in the world, and then expired."

THE YELLOW LOCUST.

Montgomery County, Md. 10th mo. 27, 1835.

RESPECTED FRIEND—I have heard that in some parts of the state of New-York, they make a business of raising locust trees for posts, and as thee seems to know every thing, would be glad if thee would give us some information on the subject;—how far apart to plant them—what cultivation they need—what kind of soil is best adapted to them—in how many years they will be fit to use as posts, &c. &c.

And oblige A SUBSCRIBER.

BY THE CONDUCTOR.

The locust referred to by our correspondent, presumed to be the common yellow locust, (*Robina pseudo-acacia,*) is a plant of extremely easy propagation—of rapid growth, and valuable not only for fence-posts, but for ship-timber and mill-works. Forests of it, of indigenous growth, have existed in the south-east part of Broome county, but they have in a measure been prostrated, and the timber floated down the Susquehannah, to Pennsylvania and Maryland. The tree is cultivated in many parts of the state, and would be in all, if its value was justly appreciated, and were it not for a formidable enemy, a *borer*, which has attacked it within a few years. In some locations, the tree is not molested by the insect, while in another, perhaps contiguous, it is wholly destroyed. The cause of this partial exemption, we cannot explain, except it be owing to soil—having remarked, that the insect is found to abound most in soils that are light and sandy.

It may be propagated by seeds, of which it furnishes a great abundance, or by sprouts, which spring up wherever the roots are wounded or severed. The seeds are enveloped in a hard shell, impervious for a long time to cold water. Hence, in order to induce prompt germination, they should have scalding water turned upon them, and the operation should be repeated upon such as do not swell from its first application. They may be sown pretty thick in drills, one foot apart, and planted in nursery rows, three feet apart, in the fall, with an interval of eight to twelve inches between the plants; or sown thin in drills, two feet apart, and be suffered to stand two seasons, when they may be planted out. While in the seed bed, they should be kept free from weeds. They may be planted at six feet each way, and thinned for fence-posts, when of sufficient size. At this distance, 1,210 trees may be grown on an acre. At a medium calculation, they will be of sufficient size for fence-posts, in ten or twelve years from the seed. The seed may be had at the seed stores, or, if applied to, we might obtain it, fresh gathered. Prices have varied from one to three dollars a pound. The *tree* requires no culture.

To multiply sprouts, it is only necessary to plough about standing trees.—They will spring up in great abundance the first season. The tree grows well on all soils that are not habitually wet, but, like every other plant, will show its keeping. There is no timber tree that makes a quicker or more profitable return to the planter.

P. S.—After the above was penned, we visited some districts of Dutchess and Ulster, in which the locust is pretty extensively grown—and what appeared strange to us, we found them free from the borer, and but very few producing seeds. In the latter county, in particular, we saw hundreds, and perhaps there are thousands, scattered over the farm of the Messrs. Hallocks, tall thrifty trees, and innumerable sprouts springing up around. Here they are exclusively propagated from the sprouts, and the trees seldom produce any seeds.

On turning to Michaux, we find mention made of a new variety, which in its early age, is entirely destitute of thorns, distinguished by the superior size of its leaves, and the rapidity of its growth. We have reason to believe that it was this variety we saw in Ulster. The growth is equal to that of the chesnut. The timber sells at fifty cents to one dollar the cubic foot.

Cattle and Sheep Husbandry.

From the Edinburgh Q. Journal of Agriculture.

ON THE APPLICATION OF THE POINTS BY WHICH LIVE STOCK ARE JUDGED—I. TO SHORT-HORNS. *By Mr. James Dickson, cattle-dealer, Edinburgh.*

Having, in my former paper, [See Cultivator, vol. I. p. 134,] enumerated the *points* and form by which the value of an ox of any breed ought to be ascertained, let us now apply them to the prevailing breeds of cattle, that we may thereby discover which is the most valuable one existing; and, after having ascertained that by

comparison, we will then be prepared to consider whether the less valuable breeds might not be improved by intermixture with the most valuable, or, at least, whether such attempt at crossing would be beneficial to the country.

Before proceeding with this interesting investigation, I may remark, that the points and form recommended for general application are neither imaginary nor arbitrary; on the contrary, they have been discovered and established by long experience patiently acquired, and they have now received the general sanction of competent judges; in short, they form the rule of judgment for our best practical judges of cattle. It may have been observed, however, that I have hitherto applied the rule only to *oxen*, and it may therefore be very reasonably demanded whether it applies well as to heifers, bulls and cows? To this I answer, that it applies to every age, sex and condition of cattle, and that if it did not, it could not be maintained and recommended as a *general* rule; but in its application to bulls and cows there is a slight deviation occasioned by sexual development. In the bull, age produces an enlargement of the muscles of the neck, and a fulness of the gristle, and a consequent dependence under the brisket; these are marks of *virility*, beside others, which cannot exist in the ox; and in the cow, age produces a thinness in the buttocks and an enlargement of the abdomen, and a consequent depression of the loins; these being marks of *calf-bearing*, which cannot exist in the heifer. In all other respects in regard to general form, points, quality and good breeding, the rule applies as strictly to the bull, the cow, and the heifer, as the ox.

Of the various prevailing breeds of cattle in Scotland which I shall enumerate and apply the rule of judgment to, I shall begin with the *Short-Horns*.

When we survey the frame of a short-horn ox, we have a straight level back from behind the horns to the top of the tail, full buttocks, and a projecting brisket; we have, in short, the rectangular form, as represented in a side view by this Fig. 1; we have, also, the level loin across the hook bones, and the level top of the shoulder across the ox, and perpendicular lines down the hind and fore legs on both sides, these constituting the square form, when the ox is viewed before and behind, as represented in Figs. 2 and 3; and we have straight parallel lines from the sides of the shoulders along the outmost points of the ribs to the sides of the hind quarters, and we have these lines connected at their ends by others of shorter and equal length, across the end of the rump and the top of the shoulder thus constituting the rectangular form of the ox when viewed from above down upon the back, as represented by Fig. 4. We have, in this manner, the form of the short-horn ox and heifer in perfect accordance with the diagrams of the rule.

Figure 1.

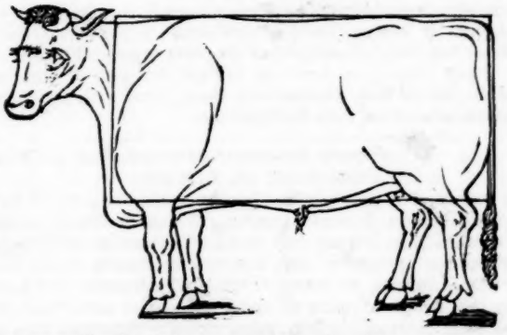
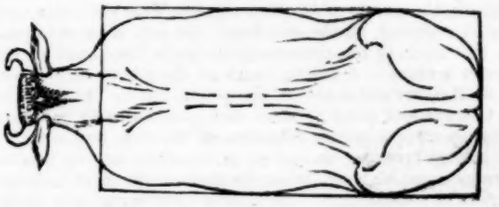


Figure 2.

Figure 3.

Figure 4.



Further, I should be inclined to assert, although I have not directed my attention to the fact sufficiently to be able to prove the assertion from examples, that the carcass of a full fed symmetrical short-horn ox, included within the rectangle, is in length double its depth, and its depth equal to its breadth. Hence, Figs. 2 and 3 are squares, and Figs. 1 and 4 each two similar squares, placed in juxtaposition. The short-horn bull deviates from the rule in a rising of the neck, a dependence under the brisket, and a fulness of the neck vein; the cow only a little from the ox or heifer, in a thinness in the buttocks, and besides this, when aged, in an enlargement of the belly, and mostly, though not always, in a hollowness in the loins. The *form*, therefore, of the short-horn breed is perfect according to the rule.

In its *points*, that for quantity and well laid on beef, the short-horn ox is quite full in every valuable part, such as along the back, including the fore ribs, the sirloins and rumps, in the runners, flanks, buttocks, and twist, and in the neck and brisket as inferior parts. In regard to quality of beef, the fat bears a due and even preponderating proportion to the lean, the fibres of which are fine and well mixed, and even marbled with fat, and abundantly juicy. The fine, thin, clean bone of the legs and head, with the soft mellow touch of the skin, and the benign aspect of the eye, indicate in a remarkable degree the disposition to fatten; while the uniform colours of the skin, red or white, or both, commixed in various degrees—bare cream-coloured skin on the nose and around the eyes, and fine tapering white or light coloured horns—mark distinctly the purity of the blood. These points of blood, and quality, and qnantity of beef, apply equally to the bull, the cow and the heifer, as to the ox. Combining all these properties of points and form, we shall find that the short-horn breed illustrates, in a very satisfactory manner, the application of the general rule which has been explained. On account of its valuable properties, this breed demands further illustration.

The external appearance of the short-horned breed is irresistibly attractive. The exquisitely symmetrical form of the body in every position, bedecked with a skin of the richest hues of red and the richest white, approaching to cream, or both colours, so arranged or commixed as to form a beautiful fleck or delicate roan, and possessed of the mellowest touch—supported on small clean limbs, showing, like those of the race-horse and the greyhound, the union of strengh with fineness; and ornamented with a small lengthy tapering head, neatly set on a broad firm deep neck, and furnished with a small muzzle, wide nostrils, prominent "mildly beaming" eyes, thin large veiny ears, set near the crown of the head, and protected in front with semi-circularly bent, white or brownish coloured short, (hence the name,) smooth, pointed horns;—all these several parts combine to form a symmetrical harmony, which has never been surpassed in beauty and sweetness by any other species of the domesticated ox.

Enthusiastic as this language may be considered when applied to the external beauty of cattle, it is not more so than the beauty of cattle is entitled to; for when it is considered that symmetry of form generally accompanies mellowness of touch in the skin, and that both constitute the true index to a disposition to fatten, the most *useful property of all*, beauty of external appearance is too valuable a criterion to be overlooked. Fortunately, indeed, beauty cannot be overlooked in cattle, for, even were it useless, it it so irresistibly engaging, that the judgment of a stoic would be biassed in its favor.

To my taste, nothing can be so attractive a spectacle of the kind as a show of fine bred short-horns in high condition, such as are to be seen at Dunse June fair, or the monthly markets at Kelso and Coldstream in May and June.

BREEDING IN-AND-IN.

The preservation of the valuable breed of short-horns is a consideration of paramount importance; and, fortunately, it is in the power of breeders themselves to secure it. It consists entirely in maintaining the *purity of blood in vigor*. This desirable end is best secured by avoiding, on the one hand, the evil of breeding in-and-in, that is, the union of too close relationship in blood, and on the other, too violent a cross. A strong mark of the purity of blood being in vigor, is the circumstance of like producing its like; and no breed will in this respect incur so little disappointment to the breeder as short-horns, after a proper selection of the dam and sire.

The evil of breeding in-and-in, or, in other words, producing too great refinement of tone, is manifested in the first instance, by a tenderness of constitution; the animals not being able to withstand the extremes of heat and cold, rain and drought. If the evil is prolonged through several generations, the forms of the animals become affected, the bone becomes very small, the neck droops, the skin of the head becomes tight and scantily covered with hair, the expression of the eye indicates extreme sensibility, the hair on the body becomes thin and short, and the skin as thin as paper; the *points* continue good, and predisposition to fatness increases, but the whole carcass becomes much diminished in size, though retaining its plumpness and beautiful symmetry. The evil, however, does not terminate in the production of these symptoms. Internal diseases ensue, such as disorganization of the liver, or rot, polypi in the trachea, or clyers, malformation of the bones of the neck and legs, and general deformity.

It is true that both Mr. Bakewell and the Messrs. Collins bred much in-and-in. Such a practice may be excusable in those who are attempting to establish a particular kind of stock, as by that means it will be sooner brought to maturity. But the same license cannot with propriety be taken by breeders who have abundance of well-bred stock within their reach from which to select their breeding stock. The invariable injurious tendency of breeding in-and-in proves that nature herself places a barrier against abuse in breeding.

CHOICE OF BULLS.

The practice of breeding in-and-in leads me to remark on the subject of judging of large and small bulls. I have had frequent opportunities of observing that premiums, at local shows, are given by the judges to *large* bulls. This I conceive a great mistake. In my opinion, the size of a bull ought to be considered of secondary importance in judging of him as a breeding animal. That which shows the greatest number of good *points*, ought to be chosen, and these should be counted by the judges. One bull may possess one point better than another; but that one possessing the greatest number of points ought to be preferred, particularly among a competition of aged bulls. Some young bulls, it is true, do not show their points till they are one or even two years old, whilst others show them from the first. When all the points are not visible on a young bull, he must be partly judged of by his pedigree. If the blood is well descended, free from intermixture, and not too nearly related in blood on both sides, then a young bull may be safely judged of by his pedigree. The points of well-bred young bulls improve as they advance in years.

CHOICE OF COWS.

In judging of cows I should make some modification of the rules recommended for bulls. They should be always large, having capacious parts to support the calf to a large size, and to permit its egress freely at the period of calving. Purity of blood, of course, must be attended to as the first consideration; but, in order to obtain a well-bred large cow to breed from, I would overlook a point or two in the symmetry or quality. As in the case with bulls, small cows will generally show finest symmetry, yet I would deviate a little on the score of points, which are every thing to a bull, to obtain a large capacious cow, which generally carries a strong healthy calf.

MILKING PROPERTIES.

It has been frequently asserted, that short-horned cows are bad milkers, indeed that no kind of cattle are so deficient in milk. Those who say so do not know the still greater deficiencies of the Herefords, a species of cattle quite unknown in Scotland. The higher bred stocks of the Messrs. Collings, Mr. Mason, and Mr. Robertson, yielded little milk. Indeed Mr. Robertson's could not supply milk sufficient for their own calves, at least not in the quantity which it was desired by him they should receive. Cows were kept for the purpose of supplying the deficiency of milk of the high-bred cows. But this deficiency of milk did not altogether proceed from the circumstance of the cows being of the short-horned breed; because those eminent breeders devoted their whole attention to the development of flesh, and not at all to the development of milk. Had the flesh been neglected as much as the milk, and the property of giving milk as much cherished as the development of flesh, their short-horned cows would have been deep milkers. As it is the generality of short-horned cows are not bad milkers. Indeed, it is not to be doubted, that where the general secreting powers of the animal system have been increased, as it has been in that of the short-horns, the power of secreting milk will be increased with the power of secreting flesh and fat; all that seems requisite, is to encourage the power of that secretion, which for the time is most wanted. I have no doubt that it is completely in the power of the breeders of short-horns to make them good milkers. It would be to desire an impossibility, to desire the full development of flesh, fat, and milk, at the same time; but there is no absurdity in desiring a large secretion of flesh and fat at one time, and a large secretion of milk at another, from the same cow. Accordingly, this is the very character which has been acquired by short-horn cows. They will yield from six to sixteen quarts a-day throughout the season; and they are so constant milkers, that they seldom remain dry above six weeks or two months before the time of calving.

But the practice of the owners of public dairies in towns, were there no other proof, would prove the milking powers of short-horn cows. They prefer them as the greatest and most steady milkers; and it is now difficult to see cows of any breeds but short-horns, or crosses with them, in these dairies. In London Edinburgh and Liverpool, fine short-horn cows may be seen at the public dairies.—They are brought by the milkmen whenever they come of age, that is, about five or six years old. They give milk till they attain the age of eight or nine, and are then fed off fat for the butcher. These cows *can* be fed off fat. This property, and that of milking, prove clearly, that short-horns possess both in a remarkable degree. They do not, it is true, possess both in an eminent degree at the *same time;* but they exhibit either property separately when it is desired. They thus give a return in flesh for part of their original high price, whilst they remunerate their owners in the mean time with an abundance of milk for their food.

From the Edinburgh Quarterly Journal of Agriculture.

ON ROT IN SHEEP.

The attention of your readers having again been called to the internal rot of sheep, I would humbly offer the following remarks to their consideration, hoping they may be of some use in leading either to a prevention or cure of that distressing disease which has been the means of ruining so many of our poor farmers, and perhaps of injuring the health of many of our people, who have been fed with unwholesome mutton. I first, then, would recommend your readers to read a small book published in 1823, at Berwick-upon-Tweed, by a Lammermuir farmer,* not that I agree with him as to the cause of the disease, but he gives many interesting facts, and useful hints. He supposes that the rot is occasioned by feeding in a luxuriant after-growth of grass, but I have yet to learn that a luxuriant after-growth of clover occasions this disease. The fact I believe to be, that it is some particular plant which affects the animal. It is surely no longer believed that it is wet or cold; for if a ewe, when giving milk, does not suffer, is she more likely to escape the effects of cold than another sheep? But I believe it is admitted by medical men, that women giving milk are not so apt to suffer from poison as other persons: so also with sheep. I am inclined to believe that the butter-cup (*Ranunculus,*) is the plant which is the cause of the mischief. Green in his Universal Herbal says, all the parts of this plant are exceedingly acrid. In the Isle of Sky, it is used instead of Spanish flies to raise a blister. Curtis states that when cattle are tempted or forced to eat it, their mouths become sore and blistered; and, according to Linnæus, sheep and goats eat this plant, but cattle, horses and even pigs, refuse it. Geese also eat it. Now, sheep

* This is an excellent practical treatise on the management of sheep in upland pastures. Its author, the late Mr. John Fairbairn of Hallyburton, we had the pleasure of knowing well; and many will bear us out when we state that no Lammermuir farmer could show a better flock of Cheviot sheep than he had.—*Ed. Q. J. A.*

and geese are more apt to have enlarged or diseased livers, than any of the other graminiverous animals that I am accquainted with.

But to return to the Lammermuir farmer. He recommends salt as a decided cure for this disease. The dose is 1½ ounces of common salt, given in three-quarters of an English pint of water, to a sheep, with an empty stomach, for three or four mornings. Limewater is also good. I have seen both given: and, on killing the sheep that had two doses of the salt, there were about 160 flukes taken out of its liver, most of which were dead. But as a preventive is better than a cure, I would call your attention next to White, that close observer of nature. He says in his Natural History of Selborne, that "worms seem to be the great promoters of vegetation, which would proceed tamely without them, by boring, perforating, and loosening the soil, and rendering it pervious to rain and the fibres of plants, by drawing straws and the stalks of leaves into it; and, most of all, by throwing up such infinite numbers of lumps of earth."—Again he says, "that the earth without worms would soon become cold, hard-bound, and void of fermentation." But more applicable still to the case of your correspondent, in p. 232, where he says, "Lands that are subject to frequent inundations are always *poor*, and probably the occasion may be, because *the worms are destroyed*." Now, I observe from your correspondent's remarks, p. 503 of vol. v. of your Journal, that this meadow, although well laid down in grass, soon appeared *starved*, after having been irrigated: so it is well worth his examining whether or not the *worms have been destroyed* by frequent irrigation? If so, I have no doubt he has got rid of the moles also, as the latter feed chiefly on the former. The Ettrick Shepherd says, vol. ii. p. 700, of your Journal, that it is his opinion, as well as that of shepherds, that the extirpating of moles, or doing away with mole-hills, was the primary cause of the disease among sheep, known by the name of pining. Now, the conclusion to which I have come in my own mind is, that earth is necessary for the general health of sheep, be it in the shape of mole-hills or worm-casts. True it is, that there are no moles in the sister island Old Ireland, and the sheep there are in general, I believe, sound, but there must be plenty of worm-casts. Your correspondent strengthens me in this opinion, that earth is good for sheep, when he states that folding them occasionally in fallow, is sometimes a means of preventing the rot.*

I watered a field of old grass in the summer 1833, which I stocked chiefly with sheep, and I found they soon became all tainted, although those of a neighbor from the same breeder were perfectly sound. The shepherd, who had known my field for many years, said he was not aware that sheep had ever suffered in the field before from the rot; and I now think it very probable that I erred in not stocking the field sufficiently, thus by the length of the grass preventing the sheep from getting at the worm-casts or other earth. It occurs to me, that one reason why the disease of the rot is more common in England than in Scotland is, that they do not feed their grass so close as we do. Besides, they do not clean their fallows so well, and have more butter cup, having older and richer pasture. The meadows in the neighborhood of your correspondent are entirely new, so perhaps the worms are not yet destroyed, which may account for no rot being in these pastures; and those that are watered by other streams may perhaps be supplied with mud or earth from such streams.

It is a custom at the Duke of Montrose's, and with others who feed pigs, to give them occasionally ashes or cinders; and as a pig is very apt to overeat itself, and to take all sorts of mixtures, it ought always (when prevented by confinement from getting at the earth of the field) to be provided with some alkali, to correct the acidity in its stomach. I had some time ago a large fat hog, which was confined, and kept very clean, getting nothing to eat but meal of various kinds, with milk; and just about the time I intended to kill it, I was prevented by its becoming very costive and unwell. I did not know how to administer any opening medicine to so strong an animal, but in turning it out of the sty, I found it began to eat earth and lime; I therefore immediately mixed some magnesia with milk, and it soon took a sufficient quantity of it. I would also mention, that when the root of the bitter cassava is given, in the West-Indies, *washed* to pigs, it kills them, but when they make their way into the provision grounds, and take plenty of earth with this root, it has apparently no bad effects on them.

It ought to be generally known whether potatoes, when given raw to pigs or cattle, should be washed. I know not what is the best corrective for the poison of the solanum family, but an alkali is given to counteract the bad effects of meadow saffron and prussic acid. At all events some earth may be the means of preventing swelling in cattle, when feeding either on turnips or potatoes.* I remember a butcher in the West-Indies telling me, that he found cattle which were fed in pastures, through which a pure running river passed, had their livers always diseased, whilst those cattle which had water to drink out of filthy stagnant ponds, in which they stood for many hours in the day, had their livers quite sound. He and I both thought at the time, that it was the difference of temperature in the water, but I am now inclined to think that the earth was the means of keeping the liver sound.

I hope these few remarks may be of some use to your correspondent, or may be the means of drawing out some information from others. Whether the rot is occasioned by some particular plant, or by a luxuriant after-growth, occasioning a fermentation in the stomach of the animal, my firm conviction is, that salt or earth, or both, are of use to graminiverous animals, as grass is occasionally to dogs and cats. Every observer must have seen horses eagerly chewing the roots of grass with earth, and grooms are aware that it is a bad sign of the state of the horse's stomach. Chalk is given to calves, and lime or shell gravel to fowls.

I would now ask, what takes place if a sheep eats some earth? does it not absorb the acid in its stomach and form a salt, thus in part agreeing with the recipe of the Lammermuir farmer? He mentions a striking fact (in his book before referred to,) that the shepherds in Spain, while feeding their flocks on land with lime stone, do not give salt to their sheep, but have occasion to do so when feeding them on any other soils; which I would account for by the lime correcting the acidity and forming a salt. I may here mention the way in which salt is given to sheep in the West-Indies; a large cask without ends is laid upon its side on the ground, a small hole being dug for the swell of the cask; four stobs or stakes are then driven into the ground, two on each side of the cask, to keep it steady; the salt is then put into it, and so protected from the rain. Those who give salt in this way, and feed their pasture close, so that the sheep can get at the worm casts, need not, I think, be much afraid either of the internal or foot rot.

I have thus attempted to say a word in favor of the worm, as the kind-hearted Ettrick Shepherd stood forward in defence of the mole, rook and wood pigeon. I recollect destroying almost all the vermin in a large district of country in Perthshire, with a view of increasing the game; but the rabbits multiplied to such an extent as to become an immense nuisance. By the way, may not the increase of field-mice in a district in France, mentioned in the miscellaneous notices of your last Number but one, be accounted for in the same way. I would recommend to them a large importation of owls. If man sets his wisdom in opposition to the all-wise Lord of the Universe, and destroys in a small degree the balance of creation, every thing suffers from it. We are indeed wonderfully connected together; yes, the meanest and most grovelling animal is needful for the well-being of the whole.

S. W.

* Buckbean (Menyanthes), Class 5, Ord. 1, is said to be a cure for the rot in sheep.

* A *large* quantity of earth, particularly in wet weather, eaten with turnips or potatoes, will cause cattle to scour, a *small* quantity will not; but scouring prevents swelling from either root.—*Ed. Q. J. A.*

From the New-York Farmer.

SHEEP HUSBANDRY.

In my communication to the last number of the New-York Farmer, I referred to an account of a sheep establishment, politely furnished me by a very intelligent and experienced shepherd, Leonard Jarvis, Esq. of Claremont, N. H. as accidentally mislaid. It has since come to hand,, and I have the pleasure of presenting it to my agricultural friends, to whom it will be interesting.

Claremont, N. H. August 23, 1835.

Rev. H. Coleman—Dear Sir—My avocations have been so pressing that until this moment I have not been able to communicate, as you requested me, some remarks upon my sheep and their treatment. Though I have been a shepherd thirty years, with a flock seldom ever less than 1,000, more frequently 2,000, I am still somewhat undecided what description of wool can be grown most profitably, and whether carefully breeding in-and-in, or judiciously crossing, produces the greatest improvement.

I commenced growing fine wool with a considerable number of the imported Paulnar and Escurial stock, then considered as the best stock in Spain, which flock I have kept to this day pure and

unmixed, and at the same time, by crossing the two flocks, have a third flock, combining generally the properties of both flocks, but occasionally showing the characteristics of one of them. At the introduction of the Saxons, I procured some valuable bucks, and by crossing them with pure Merinos, acquired a fourth flock, and consequently have had, for the last ten years, four distinct flocks, viz: Pauluar, Escurial, Pauluar and Escurial mixed, and Saxon united with Merinos. These four flocks have acquired great perfection by my unremitted attention to the selection of breeders, the Merino at this time carrying a much finer fleece than in 1810, as is apparent by contrasting the present clips with wool shorn in that year. There is very little difference in the fineness of my Saxon and Escurial fleeces; these last are somewhat heavier, with a staple more elastic. The Escurial has a greater resemblance than any other Merinos, both in form and fleece, to the Saxons that I have seen, and is probably the Spanish flock from which the most approved Saxons originated. The Pauluars are more compact in form, have heavier fleeces, and are constitutionally the most hardy of all the Merino race. I omitted to say that I had also, when I begun to grow fine wool, three other pure Merino flocks, viz: the Nigretta, Equiroz and Montarco; but after a few years' experience, I gave a decided preference to the Pauluar and Escurial, and discarded the others. You have now a concise description of my kinds of sheep; and I will say a word or two as to their general management.

I usually commence with dry fodder by the middle of November, and discontinue by the 5th of May; generally, however, for the first and last fifteen days, giving no hay, unless the ground should be covered, but feeding about half a gill of Indian corn to the sheep twice a day. As far as my experience extends, a ton of *good* hay will suffice for ten sheep, with the above quantity of grain. They are fed from racks in the yard, and have sheds to retire to at will. I have fed under cover, but believe that it tends to diminish the appetite and injure the constitution. They are kept in separate yards, in number from 50 to 100, taking care to keep those of about the same degree of strength by themselves; and have running water, though, when the ground is covered with snow, I think they do well without it. I allow about four bushels of salt to the 100 sheep, the greater part of which is consumed when the sheep are at grass. My bucks run with the ewes from the 1st to the 10th of December, allowing three to the 100. The number of lambs reared depends much upon the season; 60 lambs from the 100 ewes may be the average from flocks in quality like mine; from coarser flocks the return is greater. The ewes are not permitted to receive the buck till after they are two years old; and I prefer bucks from two years old to four.

These few facts will probably afford you little or no information; but in compliance with your request I communicate them, and should be gratified on receiving some account of your own management.

I am, dear sir, very respectfully, your obedient servant,

LEONARD JARVIS.

To this obliging communication, I take the liberty to subjoin a particular account of the above gentleman's flock, from his printed advertising card:—

"I have four distinct flocks of different properties, but of equal value in the market:

"1. Saxon mixed with Merino: fleeces extremely soft and fine, averaging about 2¼ pounds, staple generally very short; these are not so hardy as full blooded Merino, and consequently increase more slowly.

"2. Unmixed Merino of the Escurial or Royal Spanish stock: these are very liftle inferior in fineness to the Saxon; staple somewhat longer, and more elastic, fleeces rather heavier; these are more hardy and productive than the Saxon Merinos.

"3. Unmixed Merino of the Pauluar stock: these have still heavier fleeces, not so fine or soft as the Escurial; they are compact in form; constitutionally most hardy of the Merinos, and by far the most prolific.

"4. Grand full blood Merinos: stock the result of previous intercourse of Escurial and Pauluar bucks and ewes, and consequently uniting their qualities of form and fleece, but occasionally exhibiting the peculiar characteristics of the Pauluar and Escurial only.

(Signed) "LEONARD JARVIS."

A laugh costs too much if it is purchased at the expense of propriety.—*Quint.*

Elements of Practical Agriculture.

From Low's Element's of Practical Agriculture.

THE HORSE.

The horse is vastly modified in his form and characters by the physical condition of the countries in which he is naturalized. If fed in a country of plains and rich herbage, he tends to become large in his form; and such is the character of the horse of the plains of Northern Europe, as of Holstein, England, and other countries abounding in rich herbage. But in an elevated country, where the herbage is scanty, the size and form of the horse vary with the circumstances in which he is placed. There he becomes small, hardy, and capable of subsisting on the scanty herbage with which the mountains supply him. No contrast between animals of the same species can be greater than that between the horse of the mountains and the horse of the plains. The pony of Norway or the Highlands of Scotland, as contrasted with the huge horse of the Lincolnshire fens, presents such extremes of strength and size that it is difficult to believe that creatures so different can be of the same species. Yet all this great diversity is produced by a difference in the supplies of food, as influenced by the effect of situation. Nor is this peculiar to the horse; the domestic ox and the sheep are subject to the same law, and in a no less remarkable degree. These animals are essential to the subsistence of the human race, and, by a beneficient provision of Nature, they are formed to adapt themselves to the circumstances in which they are placed.

The horse fed on the arid plains and scanty herbage of warmer countries, assumes characters and a form entirely distinct from those of the large and massy animals fed on the rich pastures of temperate countries. It is from this cause that the large horse of England and the northern plains of Europe contrasts in a striking manner with the lighter shape of the horse of other regions. As we pass from the northern to the southern parts of Europe, this change of form and character appears, but yet more when we have crossed into Africa. There the horse of the desert displays the light form and agile shape which fit him for his condition. We see that he is here the creature of the circumstances in which he is placed. The heavy horse of the plains of Germany and England could no more subsist on the dry and scanty herbage of Arabia than on the heaths of Norway. The species would perish in conditions so different did Nature not provide a remedy, by adapting the animal to its condition.

The ancient horses of the north of Europe must have consisted either of the smaller horses of the mountains or of the larger horses of the plains. The horse which was chiefly employed for common uses, for war, for the tournament, and even for the chase, seems to have been of the latter kind. This appears from the accounts and representations given of him, and from the form which he yet retains when unmixed with the blood of the lighter races of the South and East. It is to this intermixture that the technical term *blood* is applied. Importations long ago took place of horses from Spain, from Barbary, and the Levant; and, at a later period, from Arabia. The African and Arabian horses accordingly have given their characters to the blood horse of England and its innumerable varieties.

The animal in which this effect of blood is the most remarkable is the English race-horse. For the combination of speed with the necessary strength this creature can scarcely be surpassed. He forms, however, a race of artificial creation, admirably suited for a particular purpose, but not otherwise deserving of cultivation, except from this, that it is the stallions of his race that continue the excellence and purity of the parent stock.

The superior class of riding-horses generally termed the hunter, is perhaps the finest race of horses known. It combines the blood of the Arabian, and other races of South and East, with the powerful form of the horses of the north of Europe in a much happier proportion than the race-horse.

From the hunter downwards to the racers where no mixture of southern blood can be traced, the gradations are innumerable. It is in this class that our road-horses and hackneys, the horses employed in our coaches and carriages of all kinds, nay, often in the mere labor of heavy draught, are contained. It forms the most numerous class of horses in the country. But a large proportion is bad, having lost the hardiness and strength of the native race

without having arrived at the speed and other qualities of good breeding.

The remaining class of horses consist of those in which no mixture, or a very slight one, of stranger blood is found. These are the ponies of our mountains, or the larger horses of the plains. It is these last that interest the farmer as the animals of labor, and to them we commonly apply the term *cart-horse*, or *farm-horse*.

STABLE AND TREATMENT.

The farm-horse demands, neither in the training nor in the feeding, that nicety which is required in the case of the horse designed for rapid motion or irregular labor. He requires merely to be maintained in good order, never to be worked beyond his power, and never to be allowed to fall, in condition, below the work which he is to perform.

The stable for the farm-horse, as for every other, should be spacious and well ventilated. It is a great error to suppose that horses require a close, warm stable, to preserve them in health. To keep them fully sheltered, and free from the action of any cold current, is all that is requisite. The horse is well suited to bear an equal temperature, but not sudden changes produced by artificial means. Farm-horses regularly worked have been known to be kept throughout the coldest winters in merely open sheds, not only without injury, but with greater benefit to their health than if they had been too closely confined.

Next to ventilation in importance, is cleanliness of the stable. No filth should be suffered to accumulate, but every day the stable should be cleaned out, with the same attention for the farm as for the saddle horse. In the farm-horse stable, every ploughman should have a small fork, a curry-comb, a brush, a mane-comb, and a foot-picker.

Light should be admitted into every stable, to a certain extent. But in the case of farm-horses, which are only in the stable during the hours of rest and feeding, less light is necessary than in the case of the saddle-horse, which passes a great part of his time within doors. The light required for the farm-horse stable is that which is sufficient to allow the workmen to perform their duties in the day-time. Sometimes there is a room adjoining the stable for holding the harness, but it is perfectly convenient and sufficient in practice, to have the simple furniture of the farm-horse hung on pins in the wall behind each pair of horses.

The food of the horse in this country consists of herbage, or green forage, as clovers and sainfoin; of dried forage, as hay and straw; of various farinaceous substances, as oats, barley, pease, and beans; and of the succulent roots of plants, as the potato, the turnip, the carrot, the parsnip, and the beet. Of the grains given to the horse, the most generally employed in this country, and that which is regarded as well adapted to his strength and spirit, is the oat.

The oat is, for the most part, given to the horse without any preparation, though it is sometimes bruised, which is always beneficial, by rendering it more easily masticated and digested. It is usually given in portions at a time, familiarly known under the term feeds, the measure of which, however, varies in different districts. A feed in some places consists of a gallon, being the eighth part of a bushel, and weighing, upon a medium, about 4½ pounds.

Two gallons in the day, or 9 lbs. are considered to be good feeding when the horse is on dry food, and not on hard work; when on hard work, the quantity may be increased to 3 gallons, and when on light work, and green food, it may be reduced to 1 gallon, and sometimes altogether withdrawn. But on an average, 2 gallons in a day, that is, about 90 bushels in the year, may be sufficient in every case for the working-horse of a farm. In practice, too, it is not the superior but the lighter oats, that are given to the farm-horses. These are the light corn formerly described.

Oats may be given to horses reduced to a state of meal, but this is only practised in the case of gruel given to a sick horse. To induce a horse to take gruel, it is put in a pail and placed beside him, so that when thirsty he may drink of it.

Meal is sometimes given with cold water to horses, when travelling. This is a refreshing feed to a horse on a journey, and a safe one when the chill is just taken off the water; but it is chiefly employed in journeys when time is of importance, and it is accordingly rarely given in the case of the farm-horse, who should always have time given him to feed.

When oats are kept in a damp state, fungi grow upon them, and they acquire a musty smell and bad taste. They should never be given in this state to a horse, but should first be kilndried, so as to expel the moisture and destroy the fungi.

Barley is more nutritious than oats, although, in the practice of this country, it is not so much approved of in feeding. But over all the Continent, barley is the most common food of the horse. If bruised and mixed with chopped straw or hay, it is an excellent provender. But the most common method of giving barley to horses in England, is in what is termed a mash. The barley in this case is boiled in water, and the whole is then allowed to stand until it is sufficiently cool. The mash forms admirable feeding for a sick horse; it keeps the bowels open, and is nutritive, without being heating.

In feeding horses, even when upon hard work, a practice has been introduced of feeding the horse entirely on steamed food, with chopped hay and straw. The proportions of the different kinds of food employed in this manner are not subject to rule. But about ¼ in weight of the whole may consist of the chaff of straw, ¼ of the chaff of hay, ¼ of bruised or coarsely ground grain, and ¼ may consist of steamed potatoes. To this should be added about 2 oz. of common salt. From 30 to 35 lb. of this mixed provender, or on an average 32½ lbs. in 24 hours, will suffice for any horse.

Two methods may be adopted in the giving of this food. Either the whole substances may be mixed together, and a certain proportion given to the horses three or four times in the day; or the dry food alone may be given during the first part of the day, and the steamed food mixed with a portion of the dried food in a mess at night.

In the first case, that is, when the whole mess is to be mixed together, the potatoes or other steamed food are first to be prepared, then weighed and mixed with the chopped straw or hay, and with the bruised oats. The quantity for 24 hours being mixed and prepared, the proportion for each horse is to be weighed and set apart in its proper pail, and given to each horse at three or more times, as shall best suit with the work with which he is engaged, taking care that considerably the largest quantity shall be given at night.

When this method of feeding is adopted upon a farm, it should be confined entirely to the months of winter, for the horses of a farm will always be best and most economically fed during the months of summer, on pasture and green forage.

Science of Agriculture,

From Chaptal's Chemistry applied to Agriculture.

OF THE EFFECTS OF THE NOURISHMENT OF PLANTS UPON THE SOIL.

It appears to be clearly proved, that plants imbibe from water and the atmosphere only carbon, oxygen, and hydrogen; but analysis shows us that, independently of these principles and the products arising from their combinations, plants contain azote and some earthy and saline substances, which cannot be produced by either of the three elements mentioned above. It remains then for us to inquire, in what manner these substances have been introduced into plants.

Azote, which is found in the albumen, the gelatine, and the green colouring matter, is not sensibly drawn from the atmosphere, though it constitutes 4-5ths of it, but passes in with oxygen in the water imbibed by plants, and, like that, is separated in their organs.

The earths which are insoluble in water, but which are mixed with, or suspended in that fluid, are not absorbed in large quantities by the pores of plants, but may be conveyed into them by the aid of some chemical agents, as the acids, the alkalies, &c. Besides, if we observe attentively, we shall find that these substances do not abound in plants; and we can easily conceive, that the little they do contain, might, in a state of extreme division, be introduced by water.

There are some plants that fasten themselves and grow upon the most barren rocks, deriving from the surrounding air, and from rains, all the nourishment required by them; of this number are the mosses, the lichens, and the fleshy plants. Their growth is slow, their transpiration almost nothing, and their colour remains nearly the same all the year round; so that they constantly absorb water and carbonic acid, and assimulate their constituent principles.

The soil is always exhausted, in a greater or less degree, by the plants it produces; and much more by those that are annual, than by those that are perennial. Air and water alone do not afford a sufficient degree of nourishment to plants, for when they have been made to grow in well washed sand, watered with distilled water, though they have flowered, their fruits did not arrive at maturity. Experiments to this effect have been made by Messrs. Giobert, Hassenfratz, De Saussure, &c.

Those annual plants which transpire most, generally exhaust the soil in the greatest degree. Pease, beans, and buckwheat, though they have succulent stalks, exhaust it least, because they transpire but little.

When annual plants are cut at the time of flowering, they do not exhaust the soil, as their succulent roots furnish materials for replacing the loss occasioned by their growth; but after having produced their fruits, the soil derives but little advantage from the dry fibres which are the only remains of their stalks and roots.

During fructification, plants absorb but litle nourishment from the soil; the supply necessary to the formation of the seed is furnished by those juices which already exist in the roots and stalks, and this occasions them to become dry and exhausted, so that, when the fruit is perfected, the roots and stalks consist only of woody fibre. It is necessary that this fact should be known, in order that too late mowing of meadows, whether natural or artificial, may be avoided. The most favorable period for cutting grass is that of its flowering; if the operation be postponed till the seed is formed, two great disadvantages will arise; the first is, that fodder obtained will have parted with the greater portion of its nutritive qualities; and the second, that the plants, having fulfilled all the laws of their nature, by providing for their reproduction, cannot flourish again with vigor during the same year.* In support of this doctrine, I will mention one well known fact, which is, that meadows mown before fructification afford the most abundant harvests, and the greatest number of them, as they may be mown several times in a year. The perennial plants which serve as fodder, may by this means be preserved for several years in a state of reproduction, but if mown after the formation of seed, the plants are weakened and the reproduction is lessened. All farmers know, that when they subject to tillage a piece of artificial grass land, which has for several years been constantly mown at the time of flowering, it will yield several harvests without any dressing; but if the grass has been left to go to seed, it will be necessary to supply the earth with manure before it will yield a good return. As those plants that are cut at the time of flowering do not exhaust the soil so much as those that remain for seed, the belief has arisen amongst farmers, that before the period of fructification, they are nourished by the constituent principles of the surrounding air and water; but that during the time of the formation of the seed, their support is almost wholly derived from the earth. But this opinion will not hold in regard to all plants; lettuce, turnips, tobacco, woad, endive, cabbages, and onions exhaust the soil greatly, though they are gathered before producing seed. Potatoes, though they produce but few seeds, impoverish land more than almost any other vegetable. Plants raised in a nursery, and afterwards transplanted, exhaust the soil in which they spring, more than the one in which they complete their growth.

Thus we see, that during the whole time of their vegetation, plants derive their nourishment from the air, and from the substances contained in the earth; but if they are mown at the time of flowering, they leave in the soil their roots and portions of their stalks, which restore to the earth nearly as much as they have received from it; whilst, if they remain uncut till they have completed their course, they return little or nothing to the soil to compensate it for the nourishment they have received from it.

It is well known to farmers, that ploughing in a green crop of any kind whatever, prepares the soil for producing well without any other manure; since, by this process, all that the soil has yielded is returned to it, with some additions resulting from the decomposed principles of air and water, which are contained in the plants.

In order fully to understand this doctrine, which appears to me of great importance to agriculture, it is necessary to consider the successive changes which take place in annual plants during their growth; first, they produce green leaves, which, by coming in contact with the air, receive from it the principles of which I have spoken; subsequently the stalks increase in size and number, and are covered with numerous leaves, which absorb from the atmosphere a degree of nourishment suited to the increasing wants of the plants; the strength, fullness, and depth of hue of the leaves and the stalks, particularly of the latter, increase in proportion to the richness of the soil.

This state continues till after the period of flowering, when a change, worthy of note, takes place; the roots dry up, the stalks wither and change their colour; and when fructification is at length completed, both roots and stalks have become mere skeletons, which answer but little purpose either for nourishing animals or manuring earth. During this period of vegetation what becomes of the juices that were so abundant in the roots and stalks? They have been consumed by the formation of the seeds. It is undoubtedly the case that plants still continue during fructification to absorb some portion of their nourishment from the air and soil; and this assists in the formation of their seeds; but by far the greatest share of the formation of these is owing to the deposites contained in the organs of the plants.*

The same holds true of perennial plants; and it may be observed, that when a tree produces fruit too abundantly it becomes exhausted and dried, and bears only that which is small and misshapen. The difference between annual and perennial plants is, that the former die as soon as the process of fructification is completed; whilst the latter preserve their leaves green and their roots fresh, for the purpose of absorbing new portions of nourishment, to be deposited in their vessels for food when the returning warmth of spring shall cause them to require it.

M. Matthieu de Dombasle, one of our most enlightened agriculturists, has confirmed by experiments the doctrine I have here advanced. On the 26th of June, 1820, at the time of flowering, he selected, within a small space, forty wheat plants of equal size and strength, each having three stalks bearing heads; he pulled twenty of the plants with all their roots, and left the rest to complete their fructification. Having carefully freed from earth the roots of those he had taken up, he cut the stalks two inches above the base, and dried separately the roots, and the stalks surmounted by their heads.

The roots and the portion of the stalks remaining with them weighed, ...	grains,	647
The stalks, heads, and leaves, ...	"	1946.5
Total, ...		2603.5

On the 28th of August, the time of harvesting, he plucked up the twenty plants which had been left for seed, separating the roots, and cutting the stalks as of the first; of these the weight was as follows:

Roots, ...	grains,	419.53
Straw, husks, and beards, ...	"	1318.75
Grain, ...	"	1025.69
Total, ...		2763.97
During these two months, the roots and the portions of stalks adhering to them had lost, ...		237.52
The stalks, head, and leaves had lost		624.67
Total, ...		862.19

But as the seed weighed 1025.69 grains, the whole had increased in weight 160.57 grains, Troy. From this experiment we may conclude, that the juices contained in plants, at the time of flowering, contribute to the formation of the grain, in the proportion of $\frac{862.19}{1025.97}$ and that the excess of the weight of the grain which is

* This holds good only in part in regard to timothy *(Phleum pratense.)* According to Sinclair, this grass contains more than double the nutriment when in seed, than when in bloom. At the same time the remark of Chaptel is correct, that the root is much more exhausted by maturing its seed, the aftergrowth is comparatively trivial, and the subsequnt crops are diminished. By cutting rye in flower, or before, which is either annual or biennial, it may be almost rendered perennial, as we have witnessed, in sowing it with lucern. We have observed the same fact in regard to many garden productions—whose existence and vigor are prolonged by preventing the formation of the seed.—*Cult.*

* Thus the succulent stalks of the maize contain, when the grain has attained its growth, the deposites of food necessary to ripen and mature the crop, and it supplies this nutriment to the grain, although separated from the root, for a considerable time after the grain is put in stooks. And hence wheat and rye may be cut before the grain is hard with benefit rather than prejudice.—*Cult.*

$\frac{160}{102}\frac{47}{5.97}$ arises from the nourishment which the plants absorb from the air or soil, during the two months of fructification.

If the wheat is mown when in blossom, it leaves in the earth, to be converted into manure, a quarter part of the weight of the plant; but when it is reaped after having come to maturity, there remains only one-seventh; and this last residue is worthless as manure in comparison with the first; this contains almost nothing but carbon, whilst that is rich in juices and in decomposable matter. Thus we see that those plants which form seed exhaust the soil most, because for all they have received they return nothing but their dry roots and stalks; whilst those that are cut when green give back with their roots and stalks what they have drawn from the soil, and a part of that which they have drawn from the atmosphere.

The nutritive principles contained in the soil pass into plants only in a state of solution, or of extreme division in water. Healthy plants absorb from preference those salts* that are most congenial to them; but if waters be charged with salts unsuited to their natures, they absorb the fluid and reject the salts till the water becomes thickened by them.

There are some salts which enter naturally into the composition of certain plants; the pellitory and nettle, for instance, which grow upon the borders of the sea, contain muriate or sulphate of soda; these vegetables, transported into other soils, afford no vestige of these salts, and their growth is vigorous. M. le Marquis de Bullion has proved that the turnsol, raised in earth containing no nitre, does not, upon analysis, afford a vestige of any; but that plants of the same kind, raised in the same soil, but watered with a solution of nitrate of potash, are charged with that salt.

Generally speaking, a superabundance of salts, especially if they be of kinds very soluble in water, injures vegetation; this is particularly the case when the salts are not such as enter naturally into the plants, amongst the number of their constituent principles. Salts of foreign natures cannot be useful, excepting as they may serve, in very small quantities, to excite and stimulate the organs of plants. The great value of sulphate of lime as a manure, is owing to its insolubility, which allows water to contain but a very small portion of it at once; so that it passes into plants very gradually, and thus its effects are prolonged for several years; till, as I have before observed, the soil is exhausted of it.

The quantity and quality of the salts contained in plants may be ascertained by an analysis of the ashes arising from burning them in a dry state. It may not be useless to mention here some facts which may throw light upon this subject.

Kirwan and Ruckers have proved, that an equal weight of herbaceous plants furnishes more ashes than of ligneous plants. M. Pertuis has found, that the trunks of trees afford less ashes than the branches, and these last less than the leaves. Evergreens yield less ashes than trees and shrubs that shed their leaves in autumn. On the other hand, Hales and Bonnet have observed, that the perspiration of herbaceous is greater than that of ligneous plants, and that that of evergreens is less than that of plants which shed their foliage. These circumstances may explain why some plants afford more ashes than others. The water which is evaporated by transpiration deposites in the cells of the plant the salts which it had held in solution, and is replaced by a new quantity which is in its turn thrown out, leaving behind it an additional portion of salts; so that those plants, and those portions of the same plant, which transpire most, must necessarily contain the greatest quantity of salts.

The salts and earths contained in plants are of the same nature as those existing in the soil in which they grow, but not, according to analysis, in the same proportions; because the plant absorbs more or less of them according to its own nature and their solubility. It cannot, however, be strictly said, that all the salts contained in plants existed previously in the soil, as some neutral salts are evidently formed within their organs; such are those of which the acid is known to us, and particularly those that contain in their composition a vegetable principle: of this sort are the acetates, the malates, and the citrates. The salts do not exist after the burning of the plant, because their acid is decomposed by the action of fire, and there remains only their base, which is usually potash or lime, but an analysis of the plant "*by the wet way*" gives proof of their existence.

It is even possible in some cases to follow the formation of the acid, by observing the progress of vegetation, and the changes produced in its products. Of this I will mention one example Beets gathered late in autumn, in the North of France, do not yield the same principles as those gathered at the same period in the south of France; the first contain sugar, the second salt petre. According to the experiments carefully made by M. Darracq in the department of Landes, the beet roots of the south, yield as much sugar in the month of August and the earlier part of September, as those of the north; this sugar then is replaced by saltpetre, of which the acid is formed during the progress of vegetation. It has been observed, that beets containing sugar frequently underwent a change during the winter by which the sugar entirely disappeared, and was replaced by salt-petre; in this case we can almost follow with the eye the process of decomposition. The juice of beets in which the change has commenced, when thrown into the boilers, becomes covered with a thick, white foam, which gives out a reddish vapor of nitrous gas: in this state the labor of extracting the sugar becomes very difficult; the sugar crystallizes badly, and the proportion of molasses is very great. It may be seen clearly, that in this state oxygen is already united in the beets with azote, and that only an additional portion, which would be gained during the progress of change in the roots, is wanting for the formation of nitric acid; this combined with the potash, which is contained in these roots in the proportion of 1-100 of its weight, would produce salt-petre.

If we observe a plant during the various stages of its vegetation, we shall perceive at these different periods very remarkable differences in the odor, taste, consistency, &c.; from this circumstance we must suppose that it forms new products, new combinations, and consequently new salts.

The alkaline salts are the most abundant in green herbaceous plants. M. de Saussure has observed, that the ashes of young plants that grew upon a poor soil, contained at least $\frac{3}{4}$ of their weight of alkaline salts, and that those of leaves of trees which grew from their beds contained at least $\frac{1}{2}$.

The proportion of alkaline salts diminishes in proportion as the plants advance in age; this remark applies equally to annual plants and to the leaves of those trees that shed their foliage in autumn. The ashes of seeds contain a greater proportion of alkaline salts, than those of the plants that produced them.

These facts are very important to those who are engaged in the manufacture of salts furnished by the combustion of vegetable substances; since they show clearly that it cannot be equally advantageous to them to consume all sorts of plants, nor at all periods of their growth.

Next to the alkaline salts, the earthy phosphates of lime and magnesia are the most abundant in plants, and, like the first, these diminish in quantity in proportion to the age of the plant. Plants also contain, but in very small proportions, silica, and some metallic oxides, especially those of iron.

* Salt is an acid combined with an alkali, an earth, or a metallic oxide, the latter of which are termed the base. They have double names, which indicate both the acid and its base: Thus *muriate of soda*, (common table salt.) is formed of *soda* and alkali, its base, and *muriatic acid; carbonate of lime*, common chalk or limestone, of *carbonic acid* and lime—*sulphate* of lime, or gypsum, of *sulphuric* acid and lime, &c.—*Cult.*

Young Men's Department.

FROM A FATHER TO HIS SON.—No. 3.

MATRIMONY.

The first concern of a young man, in starting in business, is, or ought to be, to connect himself with a suitable partner in life. Early marriages tend to save young men from habits of extravagance and dissipation, to call into wholesome exercise their mental and physicial powers, and to fix them in habits of usefulness. They are calculated to avert evil, and to produce good. Young people can more easily conform to each other's habits, and correct their faults, than old ones. The common objection against early marriages, that a man is not yet able to support a family in the style he wishes, is a fallacious one. Let your *beginning* be humble, not ostentations, whatever be your means; for it is easier to advance, as your ability and prudence will permit, than to retrench, when you find you have graduated your expenses too high. Begin to live upon a small income, and you will soon acquire the means of living upon a larger one—if you desire it.

In choosing a wife, consult judgment before passion; for if the latter gets the rein, discretion is generally disregarded, in matrimonial as in other

concerns of life. Choose your wife as you would your farm, on which you design to spend your days,—not for the gaudy exterior of the buildings, but for the intrinsic good qualities of the soil—for the good it is likely to produce you;—not for beauty and wealth so much,—though these are considerations not to be disregarded—as for the abiding good qualities of the mind, and the ability and disposition to perform with fidelity the duties of domestic life. If these qualities were in higher demand by young men, they would be more cultivated by young women. Look for a partner who will take care of the house, while you take care of the farm, and who will bring to the common stock at least her share of industry, prudence and good nature. Seek qualities in a wife which will wear well *at home*, and with which you can be content to *bed and board*, in good fortune and in bad. And having gained your wishes, by honorable means, take care to fulfil your part of the bargain—and to justify the reasonable expectations which you have raised. Use the same assiduity to *preserve*, that you employed to *win*, the affections of your partner. It is dishonorable in a young man to raise expectations, before marriage, which he cannot fulfil after marriage; and possessing the power to fulfil them, he is doubly in fault if he does not exert it habitually in the performance of his plighted faith. You are to look for happiness *at home;* and if you do not realize it there, you will seek it in vain elsewhere. Hence the temporary surrender of an opinion, or the relinquishment of a cherished habit, are trivial sacrifices when put in competition with a life of domestic enjoyment. Matrimonial jars are like fire—the more they are fed the fiercer they burn. Take care that they are never lighted upon your domestic altar. Bad passions and propensities may be overcome or eradicated when in the bud, but indulged, they acquired the firmness of the knarled oak, and corrode the best feelings that ennoble human nature. On this point you are particularly called upon, as the head, to teach, by example, those whom Providence may consign to your care.

Beware of the intoxicating influence of prosperity. "Oh, my son," is the exclamation of Sheikh Al Mohdi, "it is not the power of satisfying our desires, but the courage to suppress them, that insures felicity. The heart of man is insatiable; the accomplishment of one wish leads to the formation of a thousand; these are the pregnant sources of evil, like the small kernel that in an almost imperceptible space contains an immense tree, which will soon raise its head to the clouds, and destroy all the vegetation under its shade, and whose branches will one day or other break the heads of the children of him by whom it was planted. Moderation in our desires, and contentment with what we possess, constitute the only imperishable wealth."

INTERESTING FACTS IN CHEMISTRY.

These aeriform substances (gases and vapors) are called *elastic*, because they are all capable of being reduced into a smaller compass by pressure, and of expanding again to their usual volume whenever the pressure is removed. Thus atmospheric air may be so compressed, that 128 volumes may be forced into a space usually occupied by *one* volume, and the greater the compression the more will its elasticity be increased. It is on this principle that the air gun is constructed.—*Parke.*

Fluidity is owing to the matter of heat being interposed between the particles of the fluid; which heat would dissipate all fluids into the air, were it not the pressure of the atmosphere, and the mutual attraction which subsists between those particles. Were it not for this atmospheric pressure, water would not be known in any other states than those of ice and vapor; for, as soon as ice had acquired caloric enough to give it fluidity, it would evaporate, and be dispersed into the regions of space. This may be proved by direct experiment, as will be shown in the following chapter. The constitution of the world in this respect exhibits a beautiful instance of the harmony of nature, and of the exquisite contrivance of its divine author.

On the other hand, could we totally abstract the matter of heat from any fluid, no doubt but that fluid would by that means be changed to a solid; the lightest vapors being nothing more than solids combined with heat. Not only fluids, but all those substances which are soft and ductile, owe those properties to the chemical combination of caloric. Metals owe their malleability and ductility to the same cause; for in very intense artificial colds, the most ductile metals, such as gold, silver and lead, lose their malleability and become brittle, as Van Mons has shown.—*Annals de Chimie.*

Take, for instance, mercury. This metal is a fluid body in our climate, but by cooling it to 30 degrees below the zero of Fahrenheit's thermometer, it becomes solid; and if it be heated to 660 degrees, it will be volatilized and converted into vapor.

The elasticity of air and steam arises from the caloric being chemically combined with the solid substances of which they are composed. I say *solid*, because we have abundant evidence that oxygen and nitrogen [the principal elements of the atmosphere] are both capable of taking a solid form, and actually do, in many instances, exist in a state of solidity. Nitrogen is a component part of all animal substances, and exists in a s lid state in all the ammonical salts. Oxygen takes the same state when it combines with metals and other combustibles; and in the composition of the nitrous salts, they both take the same state of solidity. These facts surely evince that atmospheric air owes it fluidity to caloric.—*Parke.*

Whenever a body *changes* its state, it either combines with caloric, or separates from caloric.—*Dr. Black.*

It is an axiom in hydrostatics, that every substance which *swims* on water, displaces so much of the water as is exactly equal to its own weight; whereas, when a substance *sinks* in water, it displaces water equal to its bulk. Take a piece of hard wood, balance it accurately in a pair of scales with water, and then place it gently on the surface of water in a vessel which will flow over the top of the vessel. If the wood be now taken out with care, it will be found that the water in the scale will exactly fill the vacancy left by the wood.—*Ib.*

The specific gravity of bodies is denoted in chemical writings by comparing it with the specific gravity of pure water, in decimal figures, water being always considered as 1.000 Thus the specific gravity of the strongest sulphuric acid (oil of vitriol) is 1.850, or nearly nine-tenths heavier than water. Iron is 7.650, or more than 7½ times heavier than water; that is, a cubic inch of iron, if put into a scale. would require 7½ inches of water to balance it; silver is 10.470; gold 19.300; and platinum 23.000, or 23 times heavier than water.

All substances that *float* upon water are specifically lighter than it, as oils, alcohol, &c. There are various instruments which, when dropped into liquids, indicate, upon a graduated scale, their specific gravity, be it heavier or lighter than water, as the aereometer, hygrometer, &c. Thus the juice of the apple or grape is heavier than water, in proportion to the quantity of sugar which it contains; and after fermentation, it becomes specifically lighter than water, in the same ratio, the sugar, which was heavier, being converted into alcohol, which is lighter than water. The tendency of wine or cider to run into the acetous or vinegar fermetation, is in proportion to its lightness before, and heaviness after fermentation—the lighter the must the heavier the liquor, and the less sugar in the first, and less alcohol in the latter. The specific gravity of apple juice varies from 1.000 to 1.091. Some we lately tried, from mixed fruit, indicate 1.063 by Baumi's aereometer.—*Con.*

A pint measure of atmosphereic air weighs nearly nine grains; whereas a pint measure of hydrogen gas weighs little more than half a grain. The same measure of pure water weighs upwards of one pound avordupois.

It may be remarked, that the Creator has endowed atmospheric air with the property of preserving its own equilibrium at all times, and in all places. Its elasticity is such, that, however it may be consumed by respiration or combustion, its place is immediately supplied with a new portion, and though by a mistaken policy the doors and windows of our habitations may be constructed so as to exclude it as much as possible, it will have admission; it forces its way through every crevice, and performs the important office assigned it, in defiance of all exertions.—*Parke.*

Philosophical Facts.—The change of properties which takes place when chemical attraction acts, is not confined to metals, but is a general result in every case where different bodies are brought into this state of combination or chemical union. Frequently we find that the properties of each body are totally changed; and that substances, from being energetic and violent in their nature, become inert and harmless, and *vice versa.* For instance, that useful and agreeable substance, culinary salt, which is not only harmless, but wholesome, and absolutely necessary to the well-being of man, is composed of two formidable ingredients, either of which taken into the stomach proves fatal to life: one of these is a metal, and the other an air; the former is called *sodium*, the latter *chlorine.* When presented to each other, the violence of their nature is manifested by their immediately bursting out into flame, and instantly they are both deprived of their virulence. Can any thing be more striking than the change of properties in this case; and who could have supposed that culinary salt is composed of a metal united to an air? The medicine called Glauber's salt is another instance; it is composed of two caustic poisons of different kinds; one called oil of vitriol, and the other barilla or soda. There are also two substances known to chemists, which are disgustingly bitter liquids: one is called nitrate of silver, and the other hyposulphate of soda; when mixed they form a compound of considerable sweetness. But the atmosphere which we breathe is the most extraordinary of all instances: it must be surprising to those who are unacquainted with the fact, that atmospheric air, indispensable as it is to life, is composed of the same ingredients as that most violent and destructive liquid called *aqua fortis*, or nitric acid. This powerful acid being made to act upon sugar, the sweetest of all things, produces a substance intensely bitter to the taste. Charcoal is, of all known substances, the most difficult to convert into vapour; so much so, indeed, that the conversion has never yet been decidely effected: it is also a very solid substance; and diamond, which is nothing but crystalized charcoal, is one of the hardest bodies in nature. Sulphur, in the solid state, is also a hard substance, and to hold it in vapour requires a high temperature. But when these two substances, carbon and sulphur, are made to combine chemically, so as to form the substance called bisulphuret of carbon, their properties are strikingly changed. Instead of the compound being hard, it is a thin liquid, and is not known to freeze or solidify at any degree of cold that can be produced. Instead of

the compound being difficult to vaporise, it is, of all liquids, one of the most evaporable. Charcoal is the blackest substance with which we are acquainted—sulphur is of a most lively yellow hue; but the compound is as colourless as water. A new smell and taste are acquired, and, in a word, there is not one point of resemblance with the component. These facts are strikingly illustrative of the change of properties which follows on the exertion of chemical attraction between the ultimate particles of bodies.—*Donovan's Chemistry.*

CHAPTER OF FACTS.

MATHEMATICS AND PHYSICS.

If the square of the diameter of a circle be multiplied by .7854 the product is the area. If the diameter of a sphere be cubed and multiplied by .6236, the product is the solidity; and the square of the diameter multiplied by 3.14159 is the surface of the sphere.

To find the contents of a cask, add double the square of the bung diameter to the square of the head diameter, and multiply this sum by the head of the cask; then divide the product by 1077 for all gallons of 280 cubic inches each, or by 882 for wine gallons of 231 cubic inches each.

Quincunx is one at each of four corners, and one in the middle.

The convexity of the earth interposes to prevent the sight of distant bodies. Thus, at 600 yards, one inch would be concealed, or an object one inch high would not be seen in a straight line; at 900 yards, two inches; at 1400 yards, five inches; at one mile, eight inches: three miles, six feet; four miles, ten feet; five miles, sixteen feet; six miles, twenty-four feet; ten miles, 66 feet; twelve miles, 95 feet; thirteen miles, 112 feet, and fourteen miles, 130 feet.

The mechanical powers may be reduced to three, but they are usually expressed at six—the lever, the wheel and axle, the pulley, the inclined plane, the screw and the wedge.

In a single moveable pulley, the power gained is doubled. In a contined combination, the power is twice the number of pullies, less 1.

In levers, the power is reciprocally as the lengths are each side the fulcrum or centre of motion, as illustrated in the steelyards.

The power gained in the wheel and axle is as the radius of the wheel to that of the axle.

The power gained by an inclined plane is as the length to the height.

The power of the wedge is generally as the length to the thickness of the back.

The power of the screw is as the circumference to the distance of the thread, or as 6.2832 to that distance.

Resistance is an affair of experiment, sometimes a third, and at other times less.

The friction of cylinders or wheels is as the pressure, and inversely as the diameter.

The least friction is when polished iron moves on brass.

The area of a circle is the product of the diameter and circumference, divided by 4.

A fall of one-tenth of an inch per mile, will produce a motion in rivers. The greatest velocity is at the surface and in the middle, and the least at the bottom and sides But as the velocity increases, the action on the sides and bottom increases also.

Eclipses return in the very same order every 18 years and 11 days, supposing four leap year in the interval, and if five, then every ten days. Other cycles of motion, however vary the phenomenon or measure. The moon's shadow is less than 170 miles broad; but the eclipse, in degree, for 2000 miles.

A pump ten feet above a well, with seven inches bore will discharge, seventy gallons a minute; and at 30 feet 4 inches, 23 gallons.

The specific gravity of water, being 1.000; that of alcohol, pure 0.829; beer, 1.034; cider, 1.018; milk, 1.032; oil, linseed, 0.94; vinegar, 1.025; sea-water, 1.026; bone, ox, 1.666; brass, 7.824; brick, 2.; cork, .24; gold, 19.2587; granite, 2.728; iron, bar, 7.68; lead, 11.352; lignum-vitæ, 1.33; mahogany, 1.06; marble, 2.716; mercury, 13.58; oak, 1.17; platina, 20.722; silver, 10.474; slate-clay, 2.67; tin, 10.717, lime-stone, 1.386; elm, 0.671; honey, 1.45.—*Treasury of Knowledge.*

SCIENCE.—Science, the partizan of no country, but the beneficent patroness of all, has liberally opened a temple where all may meet. Her influence on the mind, like the sun on the chilled earth, has long been preparing it for higher cultivation and farther improvement. The philosopher of one country sees not an enemy in the philosopher of another: he takes his seat in the temple of science, and asks not who sits beside him.

When we set out on the jolly voyage of life, what a brave fleet there is around us, as stretching our fresh canvass to the breeze, all 'ship shape and Bristol fashion,' pennons flying, music playing, cheering each other as we pass, we are rather amused than alarmed when some awkward comrade goes right ashore for want of pilotage! Alas! when the voyage is well spent, and we look about us, toil-worn mariners, how few of our ancient consorts still remain in sight,' and they, how torn and wasted; and, like ourselves, struggling to keep as long as possible off the fatal shore, against which we are all finally drifting.—*Chronicles of Canongate.*

THE CULTIVATOR—JAN. 1836.

TO IMPROVE THE SOIL AND THE MIND.

TO THE PATRONS OF THE CULTIVATOR.

GENTLEMEN—In compliance with custom, and to discharge a duty that a publisher owes to the public at the commencement of the year, we appear for the second time before you. In the first place, in all sincerity we offer you the compliments of the season; in the next, as we follow a common pursuit, we would enjoy with you the pleasure of talking over its progress, its labors, and its prospects. We read "That the Lord God planted a garden eastward in Eden, and there he put the man he had formed. And the Lord God took the man and put him into the garden of Eden, *to dress it and to keep it;* and he further told him, 'in the sweat of thy face shalt thou eat bread, and thou shalt *till the ground* from whence thou art taken.'" We have then the best authority for saying, that from the creation man was made to till the ground, and that all the other employments that have sprung from his wants, created during the progress of society, are secondary and subservient to agriculture. Farming, then, is not only the oldest employment of man, but being of devine command, it is consequently the most useful and honorable. Six thousand years have elapsed since its institution. We have multiplied and replenished the earth—many generations have passed away, still our employment remains the same. Neither is the promise of fruitfulness lessened in the lapse of time, for through the bounty of Providence an Eden may be created any where, where there is industry to till the soil, and skill to direct the labor.

It would be interesting, if we had a knowledge of what farming was in those primitive times, to follow its progress through the successive generations that have passed to our own time, that we could date any improvements, and see in what these improvements consisted. We are afraid, however, that had we the means to make this investigation, we should find that the simple light of nature, that was first implanted in our minds for the cultivation of the soil, has not received that expansion, which so many years of toil ought to have produced, and what the age in which we live demands. If we look at the world now, and what it probably was in the days of Adam, we must see what vast efforts have been made to gratify and supply our artificial wants, and how much more numerous these are now than our real ones; and if farmers had to depend less on the bounties of providence, and more upon their own exertions, it is but fair to presume, judging what the mind of man is capable of when compelled to exert all its faculties, that agriculture, as a science, would at this day have been infinitely farther advanced. It is true, within the last few years an era of improvement, in every branch of science, and every field of labor, has opened upon us, and in our own peculiar employment the glimmerings of nature's light appear to open with little more radiance; but we are yet measurably behind the march of mind, that has led to the adoption and present perfection of all the different systems which have been developed or created by our researches or our wants. Since the days of Adam, the entire system of mechanics has been created, and they are severally advancing to an excellence that even surpasses the expectation and wants of the present state of society. Medicine, Law, and Divinity, have sprung up, and each is pressing onward towards a more perfect development and greater usefulness. Botany, Chemistry, Mineralogy, Geology, with their assistant sciences, have been modelled into rational systems, and whilst they more clearly unfold the wisdom of the great Creator, have administered to man's necessities or enjoyments. Who in primitive times could have comprehended the actual formation of this earth, and who would have thought not of following, but of pointing out with unerring certainty, the track of the heavenly bodies. It is the cultivation of man's reason that has enabled him not only to trace his path across the mighty deep, but that he need not wait upon the movement of either the winds or its waves.

These are a few of the triumphs which have been unfolded by the exercise of our rational powers. How far those powers will carry us, to what extent future attainments may lead, it is impossible now to divine, for the light is apparently just breaking upon us, and past developments are only exciting to a more diligent search into the future. Every art, every science, every branch of study or of business, points to the perfection to which it can and must be car-

ried, and within us we feel the convictions of eventual success, and are cheered with the hope. Shall the cultivation of the earth, the art most useful and first created, lag behind all our contemporaries in the race? Will we permit doctors, and lawyers, and ministers, mechanics and manufacturers, all ranks and classes, by the exercise of those reasoning faculties which we hold in common with them, to take precedence of us, simply because they use their understandings, while we are striving only to use our hands? Will we cultivate the soil, and neglect the culture of our minds, and thus contemn the law of nature which teaches, that it is the intelligent head that can most successfully direct the labors of the hand? Our art as a system, is yet to be arranged, for we know little of the capacities of the soil we nuzzle in, or what are its most bountiful and profitable productions. When our pursuit resolves itself into simple elementary principles, scientifically arranged, and easily understood, our labors will be better directed, and that Eden which was created for the enjoyment of our first parents, will, by our intelligence and industry, be re-created, and the whole earth become, as it were, a paradise to dwell in.

Efforts are now making to reduce farming to a regular system, that like law, divinity, or physic, mechanics or manufactures, a young man shall learn it as those are learned, both theoretically and practically; and it will not be till this is done, that the farmer will take his place along side of the professions in the scale of society. It is but a few years since agricultural newspapers have been successfully established in this state; abortive attempts had previously been made, but the community seemed then not to be prepared to maintain them. They have now thus far fought their way into notice, and from the benefits which they have distributed among the farming community, have established themselves upon a permanent basis. Agriculture, since this period, is looking up. All the former productions of the soil have been greatly increased, and new articles of produce to us have been beneficially introduced. There has been an obvious improvement in our stock of cattle, both by the introduction of foreign varieties, and a more thorough attention to the breeding of better kinds engrafted upon our old stock. We have become better acquainted with the best and most profitable kinds of sheep, and can now compete with any country in Europe in the excellence of our mutton and our wool. In swine, there is an evident improvement, both as regards weight and their facility to fatten. In the cultivation of the soil, new methods have been suggested and beneficially acted upon. New implements have been invented and profitably used; the old ones altered and simplified, so as to make them more manageable and far more useful. Both new and old varieties of grasses have been more successfully cultivated, which have afforded the triple profit of better and more abundant pasturage in summer, more hay in winter, and a richer sod to impart fertility to a succeeding crop. Above all, the old system of exhausting the soil by a succession of grain crops, has been most successfully exposed, and is in a measure abandoned. The subject of manures has been amply discussed, is better understood, the kinds extended, the quantities increased, and this great source of the farmer's wealth receiving more of the farmer's attention. In a word, farming is on the advance, and the hand of improvement discernable, and that the agricultural newspapers have materially contributed to it cannot be denied. We now find that the amount of our prosperity is proportioned to the intelligence with which we cultivate our farms, and as we give it more of our thoughts it seems to require less of manual labor.

These are the first results, the auspicious beginings of all our efforts, thus far, for the amelioration of the soil, which has been enhanced in value since these efforts have been made. But much remains yet to be done. There is yet a vast field open for the exercise of our power, and no man must call himself a farmer who does not endeavor and aspire to raise his fifty bushels of wheat, from seventy to eighty bushels of oats and barley, one hundred of corn, from two to three tons of grass to the acre, with that proportion of other vegetable productions. He must not be content with less. Providence has given the ground the capacity of being made to do more than this—it will be man's own sloth and inattention in abusing the soil, on which he was reared, and on which he treads, if he does not obtain, yea, far surpass, these now to us great results. *Albany, Jan.* 1, 1836.

[This preceding article has been furnished, at our request, by an esteemed and intelligent friend—to whom, in this manner, we beg leave to tender our thanks.]

AGRICULTURAL REPORT FOR 1835.

The season, as a whole, has been cold and dry, and consequently a late one. Natural vegetation was from ten to fourteen days, later than usual. The spring was so dry, that the grasses, sensibly injured by the drought and cold of the winter, did not get their accustomed early growth; and from the scarcity of forage generally experienced, the scanty herbage of the meadows was fed off too late in the spring as a matter of neces[illegible]. They did not recover their accustomed vigor. Winter grain withstood the severities of the winter better than the grasses, looked tolerably well when the spring opened, and maintained their good appearance. Indian corn, which habit has rendered almost indispensible in the economy of our farms, was not generally planted so early, by ten to fourteen days, as in ordinary years, on account of the backwardness of the spring; and it had many subsequent difficulties to encounter, which have tended greatly to lessen its product. The season has been more propitious to other crops, particularly to oats and potatoes. Yet on the whole, the products of our agriculture are less than a medium yield, as is evidenced by their high prices in market.

Wheat, we believe, afforded a fair average yield in most of the districts of secondary formation, where it constitutes the great staple. In other districts the result was less favorable. In the south, the product was seriously diminished by the Hessian fly; while in this vicinity, and to the north of us, the grain worm took at least one half the crop. The quality of the grain was good; and there has been a manifest improvement, which we hope will continue to progress, in selecting clean seed. The extra price one pays for clean seed, weighs but as a feather against the advantages of a clean crop. Our apprehensions from the grain worm are in no wise diminished. We have tried the preventive means which have been recommened without any sensible benefit. We hardly know of a more afflicting calamity that could happen to our state, than the extension of this evil, as now experienced here, to our western counties. And what is to prevent it? Is not the subject one of sufficient importance to call for legislative inquiry?

Hay has not been two-thirds, and in some districts not one-fourth, of an ordinary crop, from the causes which we have in part explained,—the want of the early and the latter rain, and the severe cold of the preceding winter,—causes, which human prudence could neither foresee nor guard against. If there is any profitable suggestion which we can make, growing out of the failure of this crop, it is that of renovating old meadows, by subjecting them to the plough and an alternation of crops. So far as our personal observation will serve as a criterion, old grass grounds fell off in their product much more than grounds recently laid down, on our own lands three to one. This disappointment in the hay crop is however likely, we think, to do a vast amount of good—by coercing us to more economical modes of feeding it to our cattle, and to the better husbanding our means—and by extending the culture of roots. The practice of feeding at stacks and in open yards, or even in common racks, where the cattle tread and waste nearly one-half of the forage, is giving way to the better system of feeding in mangers, to which the cattle are tied, and where nothing is lost. The stacks and shucks of corn have been better saved, and if cut, as they are in many instances, they are affording an excellent substitute for hay. We give today a cut and description of a yard rack, well calculated to promote economy in fodder. The hay cutter is coming into general use.

Indian corn, as we have observed, was planted late, and was very generally and seriously injured by the grub-worm. The replanted portion did not come to maturity before the frosts of Sept. 14, 15—the mean temperature of the summer having been some degrees cooler than ordinary. The frost of the 4th of August also destroyed much in the elevated districts, and upon the margins of small streams. Nor were these the only difficulties the crop had to encounter: the warm humid weather of October seemed to saturate the cob with moisture, or to prevent its becoming dry, and caused mouldiness in the grain; and in many cases where this was not fully ripened, absolute putrefaction. This was not only the case at the north, but extensively so as far south as Virginia. We note the fact here, that the reader may compare it with his own practice and its results, that we cut our corn at the ground, before all that had been replanted had become glazed; that it did

not mould or sustain injury in the field; but it is due to truth to say, that it required much watchfulness and care to prevent mouldiness after it was husked—constant stirring and exposure,—and that we were obliged to uncrib a quantity, and to spread it, to save it from being injured. We think that corn dries and ripens better in stooks, than in any other situation, even than when topped and left in the hill. In the later case it is receiving a constant accession of sap from the roots, which, for want of leaves to elaborate it, instead of being beneficial to the grain, serves but to bring on fermentation, as was stated by our Coxsackie correspodent, in the last Cultivator. The experience of the year seems to admonish us,—1. to fit our corn grounds for early planting, by freeing them from excess of moisture, by underdraining, or by ridging, where the surface is flat, or the subsoil tenacious. 2. To plant as early as the temperature of the season will admit. And 3. To select the earliest kind of corn for our crop. We have heretofore recommended a 12 rowed yellow variety, which *we* termed Dutton corn, and so far as we have learnt, this has ripened well where it it was planted in ordinary season, and was not destroyed by the grub. The growth is rather dwarfish, but it will the better bear to be planted close; the product is abundant, and the grain hard, heavy and bright. Much of our seed has been sent, during the two last years, to New-Jersey, Pennsylvania and Ohio. We should be gratified to learn the result of its culture in those states as well as in New-York. On the whole, we do not think the corn crop has been half of an ordinary yield.

Barley, which ranks next in importance to the preceding in the husbandry of many of our counties, has been a good, we think better than an ordinary, crop. On lands which will not carry wheat, and which are neither very light nor very stiff, this is a profitable crop. It gives nearly the same yield as oats, while it sells for nearly double in the market; and it is a question of some doubt, considering its superior nutritive properties, whether it cannot be as profitably raised for horse feed. In many of the eastern countries it is extensively cultivated exclusively for this purpose. The culture of this grain is extending in our state. Barley, for malting, should be threshed with a flail, as the machine, with the awn, often takes off the germinated part, which injures it for malting.

Rye is the bread corn of Germany and Russia, and the *natural* bread corn of many parts of the U. States, for we are disposed to adopt, in this case, the opinion of St. Pierre, that every country produces what is most congenial to the wants, and conductive to the health, of its population. One great difficulty is in reconciling this axiom with the actual condition of our bretheren in some parts of New-England. Wheat they cannot grow,—of corn they grow but a modicum—and rye, they will insist their soil is incapable of producing. Whether this latter difficulty arises from actual sterility in the soil, from the absence in it of the peculiar pabulum of this grain, or from the difficulty of tilling the ground, we do not pretend to say; but the fact will not readily be erased from our memory that in passing from Worcester in Massachusetts, to Enfield in Connecticut, in October, a distance, we believe, of 40 or 50 miles, we did not notice a soilitary fieid of rye or wheat. The puzzle is, what, according to St. Pierre's theory, constitutes the *natural* food of the population? But, to leave this question unsolved, the crop of rye has been good, and the grain heavy. According to Von Thaer, this grain abstracts 30 parts in one hundred of the nutriment contained in the soil where it is grown. It is less exhausting than other small grains, and is ranked next to wheat in its nutritious properties. It contains a substance, in the opinion of Thaer, which facilitates digestion, and has an action particularly refreshing and fortifying on the animal frame.

Oats have been unprecedenedtly fine. The cold season has been propitious to this crop. A large amount was sown, and both straw and grain were heavy. In many cases the crop was not secured till late in September.

Potatoes have, like oats, been favored by a cool summer; and where not cut down by the frost, before they were ripe, the crop has been a very large one. The scarcity of cattle forage and corn, however, will cause heavy requisitions to be made upon the oats and potatoes, to make up the deficiency, and present prices of these articles are likely therefore to be sustained and increased.

Mangel Wurzel and *Ruta Baga*. The culture of these roots, as field crops, has been greatly extended, and as far as we can learn, with very encouraging success. We are yet hardly well enough versed in the management of these crops, and the labor saving machines which should be used in their culture, to enable us fully to appreciate the advantages they are capable of affording to our husbandry.

Hops have made but a very light return for the labor bestowed in their culture. The crop was light in New-York, and the quality generally inferior, on account of their not having matured well before the arrival of the autumnal frosts.

The dairy has been a source of handsome profit, on account of the high prices which butter and cheese have sustained in the market. This branch of husbandry is being considerably extended among us. It probably affords as sure a profit as any other department of husbandry. The gains may not be the greatest, but they are obtained at the least risk and expense.

Butcher's Meat, though rather scarce and high in the early part of the season, has been abundant and cheap towards the close of the year. The apprehension of a scarcity of fodder, has led to the slaughter of a vast number of neat cattle and sheep; and induces an apprehension that both will be high the current year. *Pork* has been rather light, but the article has sustained a very liberal price.

BONE MANURE.

From our restricted limits, we are often compelled to give, in a condensed form, articles which we should prefer to copy entire. The Farmers' Register contains a communication from A. Nicoll, on the effect of bone manure on corn. He induced his servants, by a small reward, to gather bones in his neighborhood, and to break them in a wooden trough with pestles shod with iron, into small pieces. He selected four rows in his corn-field, deposited a small quantity of broken bones in each hill, before dropping the corn, and covered both with earth. The corn in these rows became the most thrifty, maintained a vigorous and rapid growth, while on each side, the crop suffered from drought, the grain ripened better than that in the other parts of the field, exceeded in product that manured with dung at least one-third, and more than doubled that of the land which had received no manure.

We have had considerable experience with this species of manure, appreciate it highly, and have been restrained from recommending its use, from a fear that we should be charged with *quackery*—from the scarcity of the material, and from the want of mills among us to break and pulverize it. The neighborhoods of cities and towns alone abound with the material in sufficient quantities to make it an object for the farmer. In 1834, we purchased 60 cart-loads, from an individual who collected bones from the butchers to *fatten hogs*, and collect grease for the soap boiler. We had them crushed in a plaster mill, and applied to various crops, upon a light sand soil. In most cases, they were applied in excess; and the crops became too luxuriant and lodged. It is extremely difficult for common laborers to appreciate their fertilizing properties, and to apply them as sparingly as they ought. An incipent state of fermentation should be induced, when they are intended to operate immediately upon the crop. We effect this by mixing them in a pile, with ashes, and saturating the mass slightly with water. A fermentation soon ensues, when they may be strewn upon the ground, and buried either with the harrow or a shallow furrow. *The quantity applied should never exceed forty bushels per acre, and may range from that to twenty-five.* We applied them in one instance in the fall, without fermentation.—The crop received no apparent benefit from them; but the second crop, although the ground was not manured, was treble or quadruple the ordinary product afforded by the same field. We estimate that their beneficial influence will not be exhausted under five or six years. It is stated by English husbandmen, that bone manure produces no effect upon stiff clays—we have not tried the experiment—and that it profits the turnip crop most, when drilled in with the seed.

The truth is, all animal matters are manure in a concentrated form, and should be applied sparingly. We have lately published two notices of remarkable fertility induced by the flocks, or tag-locks, and sweepings from woollen factories. We have used, to the extent of fifteen wagon loads in a season, the piths of cattle's horns, after being divested of the horny part by the comb-maker, and we have used some hundred bushels in a season of comb-maker's shavings. We apply the latter at the rate of about thirty bushels to the acre. We first cut the former upon a block, with an old axe, into pieces, then strew them upon the land and plough them under. These are years in decomposing.

THE ATMOSPHERE.

A knowledge of the constituents of the atmosphere, and of the various and important offices which it performs in animal and vegetable economy, is valuable to the farmer, not only as serving to aid him in all his rural, money making operations, but as offering a source of high intellectual enjoyment. Although the subject may be deemed too abtruse for our humble columns, we consider it fraught with so much useful instruction, that we doubt not it will be read with interest by hundreds of our young patrons; and we would fain hope that it may lead some of them into a course of study, in physical science, which will not only benefit them individually, but ultimately become beneficial to man. The Creator has endowed us with power to become acquainted with many of the wonderful phenomena of nature, and of rendering them subservient to our wants; and, in this country, the humblest individual is furnished with leisure and ample means to pursue the inquiry. The time and means that are usually devoted, in early life, to frivolous, and often deleterious pleasures, would suffice to lay in a stock of useful knowledge, which would become a blessing and a treasure in after life. But it should never be forgotten, that in all our undertakings, application and perseverance are the only sure means of success. With these views and hopes, we shall briefly describe the principal constituent parts of the atmosphere, and some of its more important offices, that seem most likely to interest the agriculturist.

The atmosphere is composed principally of two invisible gases, termed *oxygen* (sometimes vital air) and *azote*, or *nitrogen*, in the proportion of about four-fifths of the latter and one-fifth of the former. This proportion is found to exist, with trifling modifications, in all latitudes and at all elevations. Although these elements are invisable in the atmosphere, they both assume liquid and solid forms under many and various circumstances.

Nitrogen abounds in animals, but seldom to a great extent in plants. It is however found in wheat, in what is termed the gluten, and it is this which gives to that grain its prominent value. It abounds in the urine, but seldom in the dung of animals. "It is the base of ammonia and nitric acid (aquafortis) and appears to be the substance which nature employs in converting vegetable into animal substances."—*Fourcroys.* Its principal office seems to be, to neutralize, in some measure, the properties of oxygen, and to render it fit for respiration and combustion.

Oxygen enters more or less into all animal and vegetable matters;—it constitutes 88 parts in 100 of water,—forms from 40 to 70 per cent of all vegetable acids,—more than 40 per cent of the wood of the oak and beech,—about 50 per cent in starch, the principal nutritious property afforded by grain, pulse and roots—and 64 per cent in sugar. It is essential to animal and vegetable life; it is necessary to fermentation, to combustion, to the germination of seeds, and the development and maturity of plants; and combining with the carbon of the blood, it produces the greatest proportion of animal heat. It also combines with metals and forms oxydes, or, in common language, *rust*.

Nitrogen and oxygen are called simple bodies, because they are incapable of division or decomposition.

Carbonic acid gas, also, is found to constitute about one thousandth part of the atmosphere, and in winter, it has been found to amount to one five hundredth part. This is a compound substance, composed of two parts of oxygen and one of carbon, the latter being found pure in the diamond, and forming the substance of mineral and wood coals. This gas is produced in abundance by fermentation, respiration and combustion, is absorbed and decomposed by the leaves of plants, which retain the carbon and give off the oxygen, and constitutes a large portion of the woody matter of plants. The causes which produce it, sometimes, in confined situations, give it in such excess as to render it prejudicial to animals; but the free access of atmospheric air soon restores the equilibrium. It constitutes the proper food of plants. Thus animals and vegetables are mutually benefited, through the wise provisions of the Creator, by their proximity to each other—plants giving off oxygen, necessary to animals—and animals giving off carbonic acid gas, the pabulum of vegetable life.

Water also exists in the atmosphere in the form of an elastic fluid. This fluid is found to form, at the temperature of 50° Fahrenheit, about one-fiftieth of the volume of the atmosphere, in the dryest time in summer, and is increased with the increase of temperature—heat accelerating evaporation from the earth's surface. When the temperature of the air is diminished, the aqueous fluid is condensed, and appears in the atmosphere in the form of vapor, or clouds, and is copiously deposited, in summer, in the form of dew. This water is retained principally in the lower regions of the atmosphere. It is so slightly united with the other elements of the atmosphere, that a change of temperature produces a change in its proportions; whilst nitrogen, oxygen and carbonic acid preserve, always, nearly the same relative proportions.

"Independently of those bodies which essentially constitute the atmosphere," says Chaptal, "there are mingled in it the exhalations constantly arising from the earth; these are again disengaged from the air, and precipitated, as soon as the heat or any other cause which occasioned their ascension, ceases to act upon them. These exhalations modify the properties of the air, [by the carbonic acid, &c. disengaged from animal and vegetable matters in a state of putrefaction] and affect its purity. The oxygen and the water of the atmosphere become impregnated with the particles of the exhalations which are deposited with them upon the surfaces of other bodies, where they remain in contact, or enter into combination, with them. The origin and dissemination of many maladies may be traced to this source; the germ of them is carried through the air by the aqueous fluid. And for the same reason it is, that intermittent fevers are endemic in those situations, where large quantities of animal and vegetable matter are undergoing decomposition, as upon the borders of ponds and marshes; and that the miasm, which arises from numerous animal remains, in a state of decomposition, becomes a fruitful source of disease. It is for the same reason also dangerous, under some circumstances to breathe the evening air; the aqueous fluid contained in it is loaded with the noxious principles which the heat of the sun, during the day, had caused to ascend into the atmosphere. The disagreeable odor, conveyed to us in mists, is owing to the power of the aqueous fluid in transmitting the exhalations arising from the earth. The manner in which the air conveys to us the perfume of plants, and the odor which it contracts from the exhalations of bodies in a state of decomposition, indicate clearly its influence in producing maladies, and still more plainly its power of propagating those that are outrageous."

We shall not, at present, speak of the other matters which commingle in the atmosphere, as light, heat and electricity—but proceed to the improvement, and the application to rural affairs, of the facts already established.

WE MAY PROFIT BY THESE TRUTHS,

1. *In selecting sites for our dwellings*—taking care to have them remote from marshes, ponds and stagnant waters, which vitiate, by the exhalations they give, the atmosphere we breathe, and generate disease. The air in a small close room soon becomes vitiated by respiration and combustion, particularly if crowded or heated by a close stove.

2. *In the structure of our dwellings*—in constructing ample apartments, open to ventilation, and in avoiding such as are low, moist, or inaccessible to the direct and healthful influence of the atmospheric air.

3. *In improving our domestic habits*—in improving cleanliness, an ancient, if not a modern virtue;—in avoiding the deleterious influence of the night air, especially in autumn;—in well ventilating our apartments when the weather is favorable, particularly early in summer mornings, when the air is pure and salubrious;—in graduating the temperature of our rooms, which should not be suffered to rise above 64° of Fahrenheit;—in avoiding hot sleeping apartments, in which the temperature often varies from 40 to 50 degrees, between the hours of going to bed and the hour of rising, a transition too trying for the most robust constitution;—in abandoning the use of foot-stoves, which transform our wives and daughters into delicate green house plants, poison the air they respire, and beguile them into indolent and inactive habits, as detrimental to their health as it is to their usefulness;—and in inducing our females to go warmly and tidily clad, even to the ball room and *soiree*. How many human constitutions are ruined, in our cities, by indulgence in habits which these truths teach us to reform.

4. *In multiplying shade trees about our dwellings*, which serve to purify the air, abate the fever of summer heats, by carrying off a portion of the caloric with the moisture they exhale, and which are withal an embellishment and an evidence of good taste.

5. *In the construction of our stables and cattle sheds*—Farm stock, except perhaps the hog, are as sensitive to good air and cleanliness

as man; and the same precautions which go to secure the health of the latter, are essentially requisite to promote the well being of the former. Hence the importance of having clean and well ventilated stables and sheds, of removing the dung so that it does not undergo fermentation in their yards, and of giving them wholsome exercise.

6. *In the planting of our seeds.* The atmosphere being essential to germination, all seeds should be deposited in the soil within its reach—they should be put just so low as will barely secure about them moisture enough to assist their germination. We have reason to think, that small seeds are often deposited too low; and that even if they germinate, the food which the cotylidons affords, and which is their only support till the seminal leaves are developed, is not sufficient to carry the plant to the earth's surface, where the leaves can alone exercise their office.

7. *In the management of our field and garden crops.* The earths have a strong affinity for water, when pulverent and loose, but comparatively little when compact or crusted. In the former case they act like the sponge, transmitting the dews which fall upon them, and the food of plants with which they are impregnated, to the roots of vegetables. But where the earth is compact, or become encrusted by alternate rains and sunshine, the dews do not penetrate, but are dissippated by the first rays of the morning sun. Hence the best preventive against the evils of drought, is the frequent stirring of the surface, and keeping it constantly permeable to atmospheric air, and the vegetable nutrition with which it abounds. We remember a remarkable illustration of the utility of frequently stirring the surface of cultivated lands, detailed by Curwen, a distinguished British agriculturist. He prepared a field of stiff forbidding land, and planted it with cabbages. His neighbors all declared he would get no crop; but he put a horse and cultivator into it, and subjected it to almost constant stirring during the growing season. The result was, he gathered an immense crop, some of the cabbages weighing over 50 lbs. each. The farmer may derive great benefit from this practice in the culture of drilled and hoed crops, provided he does not go so deep as to cut the roots of his plants, or throw his manure to the surface. And,

Lastly, we may profit from the facts we have detailed, *in the management of our manure*, the basis of fertility to our soils. The whole of the matter of dead plants and of animals, is susceptible of being transmuted into the matter of living plants, by the ordinary processes of nature; and it is capable, however solid it may seem, of being reduced to liquid or gaseous forms. Indeed, it proceeds to take these forms immediately, on its losing its vitality, as soon as it comes in contact with air, heat and water, the great agents of decomposition. The moment manures begin to ferment, the waste of vegetable food begins; carbonic acid gas is disengaged, and is scattered by the winds; the oxygen of the atmosphere, uniting with the hydrogen of the mass, forms water, which settles into the ground, or is carried off by rains; and the mass is reduced in volume, and when fermentation has exhausted its force, it has lost one-half of its fertilizing properties. If the fermentation takes place in the dung yard, or upon the field, this half is lost to all useful purposes for the farm. If it takes place in the soil, the earth imbibes it, and the plants growing thereon are fed and nourished by it—the grasses and liquids are converted into the solid matter of the growing crop.

We have thus endeavored briefly, though we fear but imperfectly, to illustrate some few of the benefits which may result to the farmer from an acquaintance with physical science. We may renew the subject hereafter.

NOTES ON FARMING.

FROM OUR MEMORANDUM BOOK.

Breeding.—It is laid down by Cline, and sanctioned by practised breeders, that any improvement of form by crossing, must depend entirely on the selecting a well formed female, larger in size than the usual proportion between females and males. Let the male be rather small with good points. *Sinclair, p.* 61. The Hollanders manage upon this principle, and seldom employ a bull when over two or three years old. A cross of a merino buck with a Liecester ewe, in the course of four or five generations, will produce fleeces rivalling in fineness Spanish fleeces (!)—*Sinclair, p.* 14.

Growth of Trees.—A plantation in Norfolk, Eng. 30 years old, gave the following dimensions, five feet from the ground:—Scotch firs 39 inches in circumference, larch 36, beach 32, alder 32, ash 21, oak and chesut 28.—*Marshall.* The inhabitants of our old settlements will learn from this, when it is time to begin to plant timber trees for their children. The present forests of Great Britain have been all planted by the hand of man.

Planting.—"A landholder," says Cato, "should apply himself to planting of his fields while in youth, but he ought to think long before he builds. He ought not to *think* about planting, but he ought to *do* it. When he is about thirty-six years of age he may build, provided his fields are planted."

The fact with us seems to be, that we do not find time to plant when we are young, and when we are old we consider it too late—for we are unwilling to sow where we are not likely to reap the harvest. We should at least *preserve*, if we will not *plant*.

Fellenbergh's School of Agriculture.—Two only of the pupils have left Hoffwyl for a place, says Simond, before the end of their time; and one of them, with M. de Fellenbergh's leave, is become manager of the immense estate of Count Aboffy in Hungary, and has doubled its proceeds by the improved methods of husbandry he has introduced. This young man, whose name is Maderly, was a beggar boy, and not particularly distinguished at school. Another directs a school established near Zurich. M. Fellenbergh has besides a number of pupils of the higher classes, some of whom belong to the first families in Germany, Russia and Switzerland. They live *en famille* with their master, and are instructed by the different tutors, in the theory and practice of agriculture, and in the arts and sciences on which it is founded.

Carrots are sown in Flanders, in the spring, upon winter and spring grain.—and give a crop after the grain is harvested.—*Sinclair.* We have little doubt but the practice, upon deep ameliorated soils, would answer tolerably well here, as the carrot makes most of its growth after midsummer, when the grain is harvested.

Milk.—To divest this, and butter, from the taste of turnips, cabbage, wild onions, or other offensive plants, on which the cows have fed, put a quart of boiling water into each pailful of milk, when it comes from the cow.—*Marshall.* We have tried, and found it successful. The principle of flavor is volatile, and the heat of the water dissipates it.

Yard Racks.—A friend from Orange has given us a drawing of a convenient and economical rack, to be used in cattle yards, if cattle must be fed there, in extensive use in that county. It consists of four scantling or other posts, six feet long, connected together by slats, strips of boards six feet in length, and supported by diagonal braces extending from the top of one post to the bottom of the frame—the whole forming a six feet square. The slats are carried so high as to permit animals to reach the bottom over them—and it is advisable to floor the bottom. In these the straw or hay is put for the stock. The advantages which it offers are two—it prevents the fodder getting under the cattle's feet, and thereby being wasted—and it in a measure prevents the weak animals being driven from their food by the strong—four being accommodated at each rack without interfering. The number of racks can be graduated to the stock.

Agricultural Associations.—Dr. Brewster, in speaking of the British Board of Agriculture, which has been so eminently useful in advancing the improvement of British agriculture, enumerates the following among the advantages which resulted from its establishment.

"Two advantages among many may be mentioned: 1st. A great number of new men were brought forward by the board, whose names would probably otherwise never have been heard of; and those being chiefly practical people, who were professionally concerned in farm management, agriculture, by their endeavors, was rescued from the hands of theorists, and a revolution of no small extent accomplished in rural affairs. 2dly. Before the board was instituted, the bond of connection among agriculturists was slender, and served few useful purposes. *Each trusted to his own information, and knew little more about the practice of conterminous districts, than those of China, or the most distant country.* The establishment of the board removed at once all these evils and difficulties. A common fortress, erected for the benefit of all agriculturists, and to which each might resort for advice and protection, was immediately recognized. It made farmers, who resided in the most distant quarters of the kingdom, acquainted with one another, and caused a rapid dissemination of knowledge among the whole profession. The art of agriculture was brought into fashion; old practices were amended; new ones introduced, and a degree of exertion manifested which had never before been exemplified in this island."

Pudney's Patent Horse-Rake.—We have seen a model of this rake, and, so far as we can judge from mere observation, we think it superior to any we have before seen. It not only revolves, but when it turns it gathers the hay again immediately at the base of

the winrow which it makes. Mr. Pudney resides at Stamford, Delaware county.

Manual Labor Schools seem to be multiplying in every part of our country. They will have a most salutary influence in invigorating the constitution of the pupils, mostly intended for the ministry, and in diminishing the expense of a literary education. But let it be borne in mind, they are not agricultural schools. Agriculture, we believe is not *taught* in them, as a science or an art, but merely *practised* as a healthful exercise, and on the score of economy. What we want is, schools in which the theory and practice of agriculture shall constitute the paramount study of pupils destined to follow it in manhood. We want to combine with the economy and healthful exercise of the manual labor schools, the *instruction* in husbandry which is calculated to make good farmers and good citizens.

Transplanting.—We publish an excellent article upon this subject, in this number, from the pen of Mr. Downing, of Newburgh. It goes to explain the principles, the why and the wherefore—the science of the practice which it recommends. This feature should mark all our agricultural writings. It teaches the head as well as the hands. We commend it to the notice of our Poughkeepsie readers, where we lately observed hundreds, nay we believe thousands, of limbless maples, planted to ornament the high-ways and by-ways; and we were told, that to give these poles a more comely appearanco, pains had been taken, by at least one planter, to rasp off the scattering buds which protruded from the naked bole, the remaining germs of vegetable life.

Common Schools.—A general sentiment seems to prevail, that something efficient ought to be done to raise the character and usefulness of our common schools. Societies have been formed in several towns, in furtherance of this object. The impulse comes from the right quarter—from the people. The legislative provisions, as regards pecuniary aid, are already ample; and were they doubled, they would benefit but little, without a more hearty co-operation in the districts. Self-dependence goes a great way here, as in most other matters. If we depend upon the legislature, or upon others, to do for us, it remains undone, or but badly done. But if we resolutely resolve to do *our* duties, they are likely to be well done. Call not upon Hercules till you have put your own shoulder to the wheel. The work of improvement is begun, and we hope every one will give an impetus to its motion. It needs it.

Agricultural Fairs.—Our exchange papers from Ohio, are filled with the proceedings—the addresses, premiums, &c. delivered at their agricultural fairs; an agricultural society, we believe, having been organized in each of the fifty odd counties of that state, *fostered by the patronage of the legislature.* To us, the subject is one of deep interest, and indicates in our young sister, a healthful advancement in improvement. But New-York, who prides herself for her liberality and enterprise in almost every sort of improvement, is yet pausing in doubt, whether her agriculture deserves any extraneous aid.

Publications on the Silk Culture.—In addition to the three periodicals, devoted to the silk business, which we have noticed, as having been commenced the present year, there have been published three volumes, or pamphlets, professing to describe the whole process of raising the mulberry tree, rearing the silk worms, and reeling the silk. One is published by W. G. Comstock, Hartford, comprises 100 pages, and is sold for fifty cents; another by Russell and Odiorn, Boston, written by W. Kenrick; and the third, by Sinclair and Moore, Baltimore. We should think either of them an important guide for a beginner—though we have not had the opportunity of examining any of them.

Our correspondents have enabled us greatly to enrich our present number. The communication of Mr. Allen, on farm buildings, and the management of farm stock, is of deep interest to every farmer, and the opinions it expresses tally generally with our own. We are not, however, prepared fully to concur with him on the propriety of *stabling* neat cattle—for the reason that it is apt to make them too sensitive to cold when turned out, and that they have not all the benefits of fresh air which they require. Our practice is to tie them in sheds, open on the south or east, and closed on the north and west, to give them a clean littered berth, and to feed in mangers. The number on the Emigrant Merino sheep, will tend to dissipate any errors that may have arisen on this head, to reconcile us to the Saxon branch of the family, and to induce us to endeavor to improve them in hardiness and size, as we ought to do all our farm stock. The other communications will also be found to be interesting.

Irrigation.—We have refrained from recommending this branch of improvement, because our climate does not require it, and because it is too expensive for our scale of husbandry. Irrigation is essential in southern climates, as Egypt, Italy, Spain, &c. where rain seldom falls in summer, and where the heat is great and unremitting. With us, drains are far more essential to take off the excess of water than to flood our lands. Systematic irrigation is very expensive, requiring the surface to be perfectly graduated, so that the water may be completely taken off, as well as spread over the surface, at pleasure.

Household Affairs.

Every house-wife knows how to make *herb*-tea. The herbs are put into a cup or dish, hot water turned upon them, and they are suffered to *steep*—why not to *boil?* Because a large portion of their medicinal virtues, and particularly the principal of flavor the most volatile property they contain, is dissipated by boiling, and the virtues of the tea lost. In the processes of boiling and fermentation, the natural flavor, and aroma of the choicest vegetable productions are dissipated or changed. Yet though every woman knows how to make herb tea, few seem to know how to make *green* or *black* tea, or *coffee;* or knowing, do not reduce their knowledge to practice. A mistaken economy, to *get all the strength*, induces them generally to *boil* the latter *well*, and often the former; and the consequence is, that instead of a grateful refreshing beverage, they give us a dull, acrid or insipid substitute, retaining nothing pleasant but the color and heat. The aroma, which gives to the liquor its value, and which should be recognized by the nose as well as the palate, is gone—*with the steam*—and with it much of the flavor. They not only *boil out* the strength, but they *waste* it. Now without intending to infringe upon the prerogatives of the good wife, we *do* advise, that she will make her green and black, as she does her herb tea, *without boiling;* and that she will only *leach* her coffee, by putting it, when recently burnt, and fresh ground, into a strainer, fitted to the top of her coffee pot, and turning upon it as much boiling water as would suffice in the old mode. We can assure our fair readers, from reason as well as experience, that this *is* the best way, not only to gratify the taste, but to promote economy. Less tea and coffee are required in the steeping and leaching, than in the boiling process, and the beverage obtained by the mode recommended is more tonic, exhilerating and pleasant.

CORRESPONDENCE.

FARM BUILDINGS AND THE CONSUMPTION OF FODDER.

Among all the deficiencies which exist in the perfect management of our farms, I am sensible that none are more prominent than that of proper buildings. Not that I would advocate expensive or large buildings, but those of ample size and convenience for all the *legitimate* uses of the farm, and of such shape and construction as shall conform to strictly economical calculations.

For instance, I would not build an expensive *stone* barn on my farm, when one of wood, equally good for all ordinary purposes, can be erected for a sum not greater than two or three years' interest on the cost of the stone one; because a well under-pinned wooden building, where extraordinary warmth and tightness are not required, will endure at least fifty years, and need shingling no oftener than a stone building. So of stables, sheds, outhouses, &c. But not so of dwellings.

The desire of warmth with which human beings are sheltered, forms a prominent part of the comfort and usefulness of life, and therefore, all dwellings should be built of the best materials, and constructed in the warmest manner compatible with the ability of the owner. I have much doubt whether the occupant of an open, badly built house, does not pay three times the annual interest of its cost, in the extra fuel and labor consumed to keep its inmates comfortable; and among no class of people have I found so great an inattention to these very important matters, as among our moderate farmers; and when the annual losses by disease, exposure, extra labor of obtaining and preparing fuel, and of time in various ways, all arising from a cold and comfortless house, are taken into consideration, I am thoroughly satisfied, that a great portion of the profits of a whole family's industry, are annually lost by the wretched houses they occupy.

The great fault committed by most farmers in their buildings, is in the great size of their dwellings. Many who build, calculate to do it

within themselves; or they get out their own timber, draw their own saw logs to the mill, if there be one near them; quarry and haul their own stone, &c. &c. and so manage as to hire but a portion of their mechanic work, turning in their own labor and that of their sons and hired men, if they have them, to assist in its erection. This is as it should be; but the difficulty is that they often plan too largely, calculating on finishing off only a small portion of the house *at present*, and to do off the rest at some future opportunity of more leisure and convenience. But these future opportunities of leisure and convenience rarely occur, and so much more capital is often expended in the inclosing of a large dwelling than had been anticipated, or is at all useful to the family, that it remains forever unfinished, and a cold comfortless receptacle for them, when a snug, warm and delightful dwelling could be entirely finished, with every requisite comfort for a numerous family, at the cost of the unfinished shell! How painfully true is this fact in numberless instances.

This fatal error oftentimes extends itself to the outer buildings of the farm, alike prejudicial to all descriptions of stock kept upon it, and of most serious account in the year's results of its products. Fortunately there is so little intricacy or science needed in the construction of farm buildings, that even the least skilful may erect comfortable and necessary shelters for all his domestic animals, and materials abound so plentifully in our country, that they are every where to be found. It is better even, in my estimation, for a farmer to sell a small portion of his land, to accommodate the remainder with proper buildings, if he cannot do it otherwise, for he is actually richer in the end to do so; as for the most of them, the produce on an eqnal number of those acres would be annually wasted for the want of them, besides all the discomfort, misery, and suffering caused by exposure to the inclemency of the seasons. This may be unpleasant argument to those who are intent upon nothing but increasing the extent of their farms, regardless of the comforts and profits of their stock. Yet such, were they to pause in their acquisitions, and by the erection of necessary buildings on their farms, secure more effectually its products, would in a short time accumulate much more rapidly than before. I name these facts with more emphasis, because I am well assured by my observations throughout the country, that the want of necessary and proper buildings is the greatest drawback our farmers experience in the profits of their labor.

Of what avail is it that I reap fifty bushels of wheat, or an hundred bushels of corn to the acre, and lose one-third of it for want of shelter, or waste in feeding? Unless I can secure my crop, my profit in growing it is of small account. If I cut fifty tons of hay, and, by exposure in stacks to the weather, only forty of it can be eaten by the cattle, and one-quarter part of that even is trampled under foot, I had better have had only thirty tons of good hay in my barn, and even then my stock would have consumed five tons less by being warmly housed for the winter. This is a view of the case which I think must strike every thinking mind, and will apply itself to every kind of domestic animal on the farm. To my mind it has been most strikingly presented by a year's experience, and I am of opinion that the difference in the consumption of food for the domestic stock of a farm, taking in all the losses incident to the forage itself by want of housing, &c. is at least *thirty* per cent, compared with the most economical method of expending it; and in some cases even *forty* or *fifty!* I am aware that this calculation will strike the reader with surprise, and by many it will not be believed; but to such I only say, try it, and he will become satisfied of its truth.

In the spring of 1834, the management of a large tract of land coming under my charge, portions of which had for years been most miserably mangled by a horde of squatters, who had cut, haggled, and worked the land after their own fashion, although abundantly productive by nature, I found it in a most miserable condition, requiring immediate care and attention. Numerous wretched log cabins were scattered over it with bark roofs; an occasional shed for cattle, with a parcel of old rails thrown over the top, and on them the remains of an old stack bottom, where their hay, stalks, or straw had been stored, were all the buildings or conveniences to be found on the premises. Three or four of these little squads or settlements had been made on different parts of the territory, and each one comprised within its compass from one to two hundred acres of this partially cleared, girdled and dilapidated improvement. Having got rid of the squatters, and selected one of these settlements most conveniently located for immediate operations, and taken the best cabin, well situated and convenient for a dwelling, I put into it a good family, fit to manage the place, built an addition to it also of logs, put on a good shingled roof, and with a hundred or two dollars expense, made a very comfortable affair of it. With sufficient help on the place, the fences were straightened and put into line, the old bouks, (*bocks,*) brush fences, logs, &c. &c. cleared up and tolerable crops got in. Having come into the place about the middle of April, it was too late in the season to make rapid advances, but in the course of the summer perhaps 30 acres of oats, 5 or 6 of corn, and as many of potatoes, were cultivated and yielded a tolerable crop. A dozen acres of wheat were also sown in the fall, and perhaps 70 or 80 acres of land worked into tolerable shape for another season. Yet we had no barns nor the means of building any during that year; one wretched log stable, which stood near the house, was all that we had for shelter to any of our animals, and with that we shifted to get along. Our hay, of which we had some 60 or 70 tons cut from a distant clearing, our oats, corn, fodder, &c. &c. were all stacked out in the open air. Winter came upon us. With a few thousand feet of boards and the aid of crotches and poles, we made some sheds and mangers for our cattle, of which we had a large stock, composed of oxen and cows, and erected some racks in the yard to feed them in. By these means we got through the winter after the fashion. Our cattle had enough to eat, and during the cold weather looked tolerably well; but as the cold rain and snow storms of March and April came on, they grew poor in spite of all we could do. Food enough to keep in high condition double their number, if well housed, was given them, but all to little purpose. The storms wet the fodder in the stacks, the cattle trampled it into the mud under their feet, and with all the care given them, which was a great deal, I am fully satisfied that at least 25 per cent of the food given them was entirely lost!

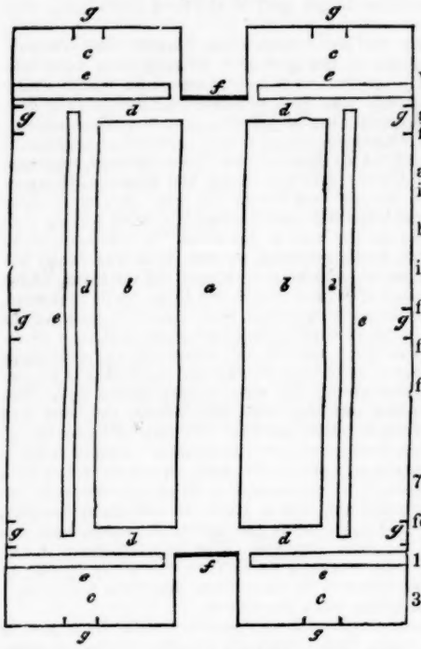
And yet this was better and more economical feeding than one-half the stock of our country get on the average! It may be a bold and sweeping remark, but it is nevertheless a *true* one, and would every farmer make the experiments who thus practises, he would fully test its correctness. We had great labor to perform, and therefore submitted to the loss and inconvenience accruing to this mode of management. During the winter, we cleared up more of this *slashed* ground, enclosed it, drew off its wood and timber, and last spring had perhaps 200 acres of pasture, mowing and plough land ready for use. We were now ready to build a barn, and after the spring crops had been put in, proceeded to erect one proper for the uses of the farm. It was soon built, covered and inclosed, and by haying and harvest time was ready for use. It was placed on a central and convenient spot for the farm, which is a large one, and although this barn is 100 feet long, by 50 feet wide, and 18 feet posts, with leantos for stables on each side of it, with a floor 14 feet wide lengthwise through the centre, more room will soon be required. It was a matter of much wonder and inquiry by my neighbors who saw the barn, of what possible use it could be, supposing it a most extravagant building, although for the size, a very cheap one. Yet when we had cut and stored our hay, oats, and wheat, the barn was crammed full to the roof, on the floor and all. We housed every thing; all was put in, in perfect order and good condition. Ample room is there made to tie up every animal to be fed, and not a lock of hay or a spoonful of grain need be lost. The manure is all saved, and in a convenient situation to be carried out, and a degree of economy, comfort, and satisfaction experienced in spending the food to the stock, that amply compensates for all the extra expense. The hay and grain it contains is more than 150 tons, enabling us to feed out every bundle of straw and coarse fodder, which is in most cases altogether lost or only used for manure: a plan of this barn is annexed.

There are so many collateral subjects connected with the barn and other outbuildings of a farm, that it is hardly possible to give an essay on this subject without discussing the different methods and economy of feeding stock, with the preparation of the food, preservation of manures, &c. &c. But as the *principle* of feeding is the same in all kinds of neat cattle and horses, it will apply to all cases. In the first place, I hold that there is no straw, corn, fodder or grass cut on a farm, with the exception perhaps of the straw of peas, beans and buckwheat, but what may be consumed as *food*; therefore all reasonable pains should be taken to secure them in good order and have them well stored, and sheltered for winter food. How many thousand tons of valuable wheat straw have I annually seen in our wheat counties thrown out from the thrashing mills, and piled up year after year to rot and taint the atmosphere with its offensiveness, when it might all be made into the best of food for cattle, by being housed and chopped with trifling labor! It appears with many farmers to be a matter of no sort of consequence *who* feeds the stock, or *how* they are fed, provided they are only fed at all; not considering that there is equal economy in spending the food as in securing it. Look at the season of haying and harvest among our farmers. What preparation for toil and incessant labor, increase of help, high wages, &c. &c. Up by day-break in the morning, and at work, and no rest till dark. It is the extraordinary season of the farmer, when every thing is sacrificed, even the Sabbath oftentimes, to toil, and no cessation till it is all over. But when the winter comes on, this invaluable food, collected at so much cost and toil, is expended with a heedlessness and prodigality unaccountable to any rational or thinking mind. This indeed may seem foreign from the subject of which I am treating, but it is too nearly allied to it to be lost or overlooked.

My own method of feeding is to cut *every* kind of straw, and even the coarse marsh or meadow hay, in the cutting box, and mix it with a light portion of shorts, bran or oatmeal, just enough for the cattle and horses to eat it. In this way they consume every thing. Nothing is lost; for what they leave is taken from the mangers and mixed over again with the new mess. It is the exclusive business of one man to cut the food, clean the stables, and feed the cattle; and if he needs as-

sistance, he has it. By this means he becomes acquainted with the appetite and health of each animal, a matter altogether important. If they be out of health, or need extra nursing or attention, he knows it and provides for them. A change of food is occasionally given, and by this operation all is relished and eaten perfectly clean. We now feed about 40 yoke of oxen, 8 or 10 horses, a dozen cows, some sheep and young stock, all in this manner, though not all in one building, without any waste at all. Every thing is saved. Every animal is tied up in its place excepting the sheep, and each has its own portion without fear or molestation. I well know that they consume less food per head by thirty per cent than they did during the last winter, when they were fed nearly, if not quite equal to, the ordinary method practised throughout the country. Our oxen I am satisfied perform more labor, the cows yield more milk, and all the animals consume less food by being thus housed and attended. But to the plan of the barn. It is here given.

Ground Plan.



Explanation.

a. Barn floor, 14 feet wide.

b. b. Bays for hay and grain, 18 feet wide and 92 feet long.

c. c. Stables for cattle and horses, 13 feet wide in the clear.

d. d. Passages to stables, 4 feet wide.

e. e. Mangers for feeding, 2½ feet wide.

f. f. Great doors, 14 feet wide.

g. g. Stable doors, 5 feet wide, double.

Length of barn, 100 feet.

Width of barn, 50 feet.

Posts of do. 18 do.

Pitch of roof, 12½ do.

Height of leanto posts, 7 feet.

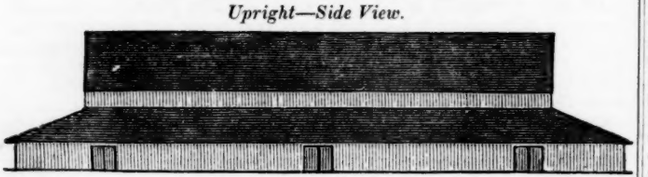
Pitch of stable roof, 8 feet.

Length of side leantos, 100 feet.

Length of end leantos, 38 feet.

Upright—End View.

Upright—Side View.



The barn is framed as if to stand alone, omitting the lower girt at the ends on each side of the large doors. The leantos are then framed on to the barn in the simplest manner—the passage being *round* the main body of the barn, excepting at the ends, where the passage is *in* the main barn, and the leantos there only 16 feet wide, and the manger is fitted up to the main barn. Only one passage is made to go into the short stables at the ends. Stalls are made 7½ feet wide and boarded between, and each ox or cow is tied next to the partition side of the stall, which prevents their getting together, and saves much room. The doors are sufficiently wide to drive in a pair of oxen yoked, and large spikes are driven in the plates all round the stables to hang harness, yokes and chains upon.

The bottoms of the mangers are raised ten inches from the floor, and laid double. The sides of the stable are also battened with thin boards inside, which makes them perfectly tight and warm; windows, with sliding shutters are made in the sides, to throw out the manure.

Girts run parallel with the main floor in the posts, across which are laid poles, nine feet above the floor, on which hay or grain can be piled up to the peak.

This barn will hold 200 tons of hay and 46 yoke of oxen, or 100 cows or horses. If only ordinary stock is kept, the *long* leantos need be only 18 feet wide, and the *short* ones 14 feet. Granaries can be partitioned off from the bays or stables as may be convenient. If a thrashing machine is used, a part of the stable can accommodate it. Its whole expense, finished complete, is about $1,500.

On this model, barns of any size may be built, and I am well satisfied that, according to the room required, it is altogether the *cheapest* in cost and simplest in construction of any plan I have seen. If a less proportion of stable room be needed, it may be omitted where convenient.

The passages round the ends of the bays and in front of the mangers, are for feeding the cattle, every thing being put in front of them. The passages are wide enough to carry hay, and when the bay is partially fed out, the hay may be thrown directly into the passages.

I would on no account, store hay or other material over the cattle, under the stable roofs, although there is considerable room, as I am satisfied from experience, that there is none too much space left for ventilation.

The floors are lined with thin refuse boards, excepting a part of the stables, it being my wish that *nothing be lost*.

This barn is placed on level ground, having no side hill convenient on which to place it. I would prefer, if possible, a sloping piece of ground, and make an ample cellar beneath it, to receive the manure, preserve roots, &c. &c. It will add to the expenses of building, but greatly to the convenience and economy of the farm.

This, it is true, is on a larger scale than is needed for an ordinary farm; yet many farms require as much and a larger quantity of barn room. If every thing be saved and housed that can be profitably expended in the feeding of stock, much more shelter is required than is supposed. If the farm be small, the size of the barn should be graduated to its wants. This plan has been closely examined by many farmers of great experience, and pronounced to be the best they have seen. The utmost possible economy of room is made for packing the hay and grain, and the stables are mere leantos, made of light frame, attached to the sides and ends of the main building. If wood covering for either the sides or roof of boards and shingles are not to be obtained, they may be made of thatch. The bodies of the building may even be laid up of logs and covered with slabs, so that they be well chinked and comfortable. It is true that there is some waste room over the cattle in the stables, but no more than is wanted for ventilation and to pass off the respired air, which is deleterious to their health. The letting in of fresh air in cold and stormy weather, through the sides of the building, gives them colds and diseases, to which they are as liable as the human family. But even if only sheds are wanted, I am satisfied that they are better to be attached to the sides of the barn in the way these stables are, than in any other, being more convenient, and allowing the stock to be fed in them with greater economy. The stables attached to this barn being for the accommodation of working cattle mostly, are wider than need be for an ordinary stock, and may be made narrower. But amongst all other plans, I have found none which combine the requisites of cheapness, economy of feeding, and storage like this. It has withal an appearance of snugness and comfort about it that greatly embellishes the farm.

If sheds are wanted in addition, they can be attached to the stables and run off in either direction, and accommodated with racks or mangers as may be required. But every domestic animal on the farm should be fed at the barn, with the exception of sheep, which require, if kept in large numbers, a different and separate course of management. The custom of stacking hay or grain in the fields is at best a bad one, and if resorted to, it should be removed to the main barn as soon as the cutting season is over, or there is room in the barn to receive it. Small moveable barns are frequently built to store it in, and from them feed to cattle during the winter; but this in the best of weather is accompanied with waste, particularly in the manure, which is valuable even on the best of soils. It is besides much less labor to carry the hay either on sleds or wheels to the barn and then feed it to the stock, than to go daily two or three times to fodder it out. So much has been said and written on the wasteful method of feeding at stacks, that at this time it is almost superfluous to mention it.

As to the other ordinary outbuildings to the farm, it is only material that they be conveniently and economically built. No farm house should however remain without a swill house, with a large cauldron set in brick, an ample wood house, wagon and tool house, corn-crib, &c. near by. As to the dwelling, it is a matter of fancy with many, and to those who have the ability, provided they make it comfortable and convenient, it matters little what is the shape, size or style of it. Still there is a model that I consider cheaper and more convenient than

almost any other, and for those landholders and farmers who build for the accommodation of their tenants, I consider it a most excellent one to follow. I am about building one on a farm of my own for the manager to live in, sufficiently capacious to accommodate his own family and half a dozen hired men. Its whole expense will not exceed a thousand or twelve hundred dollars, and if opportunity offers, I may send you the plan in some future communication.

Most truly and respectfully yours, L. F. ALLEN.

Buffalo, December 5, 1835.

SHEEP HUSBANDRY—No. III.

THE EMIGRANT MERINO.

There does not appear to be among those who write and converse on the Saxony and Merino sheep, a distinct and definite understanding of the subject. By most people they are regarded as distinct races of sheep; and designated by many imaginary distinctions.

To whatever region the Spanish Merino has emigrated, he is to be identified with the original, like the greyhound. Thence arises the inquiry, where has he been preserved in the greatest purity? held in the highest estimation and cultivated with the most care? in Saxony, France, or America? And when we talk about *old fashioned merino sheep*, it must at the same time be understood, that one variety of the parent stock is four times as valuable as others, and that this necessarily influences the emigrant, and determines his value. Then comes the consideration of individual peculiarity and excellence, which forms the basis of improvement, and the preservation of his purity.

The first emigration of the Spanish merino with which we have any acquaintance, was to Saxony; whose history has been partially narrated in the first No.

The second was to France, in both instances under circumstances of sovereign, or state patronage. This second I shall furnish principally from a transcript of the writings of others.

"When France became a manufacturing, as well as an agricultural nation, it was perceived how great an injury she sustained by being dependent on foreigners for all the fine wool which she employed, and it was well understood how great would be the advantages which she would derive from the production of it within herself.

"This subject occupied the serious attention of Colbert, whom nothing escaped which might tend to the advantage and greatness of his country—he projected a change in the system which prevailed. Succeeding ministers attempted without effect to put his designs in execution.

"It was not until the year 1766, that Daniel Charles de Trudaine, an able minister, employed the surest means of succeeding, and thus freeing the kingdom from the tribute which it paid to procure fine wool. After his death, his place was supplied by his son, who followed the plan laid down by him. Daniel Charles de Trudaine had addressed himself, not to cultivators of land, whom narrow views and prejudices are too apt to deter from adopting whatever they have not seen practised by their forefathers, but to Daubenton, an able naturalist, who instantly perceived the possibility of what was proposed, and proved it by satisfactory experiments."

"It having been ascertained by a variety of experiments patronized by the administration, and conducted by enlightened agriculturists, that the merino sheep might be acclimated in France without any change in their wool; application was made by Lewis sixteenth to the king of Spain for permission to export from thence a number of merinos. This was not only granted, but orders were given by the Spanish monarch that they should be selected from the finest flocks in Spain. In the year 1786 four hundred rams and ewes arrived in France under the care of Spanish shepherds. Fortunately for France, the improvement in sheep, begun under Lewis the sixteenth, was continued through the revolution, in which almost every other useful institution was involved in ruin. A committee of agriculture was formed in the convention, and under their protection the amelioration of the merino flocks happily progressed." From this originated the celebrated Rambouilet flock. From this, the writer says a number of rams and ewes are annually sold, after the finest are picked out to keep up the original stock. And notwithstanding the annual sales from the national flocks, the price of rams is daily increasing."

So particular have the governments of Saxony and France been, to preserve these flocks from degenerating, and to effect every possible improvement, that they have at different times sent experienced shepherds into Spain, to select from their choice flocks superior individual rams, for which, in some instances, they have paid enormous prices, to preserve the necessary change without breeding in and in.

In such high consideration was this subject held by the successive administrations of the French government, that a commission was issued to the institute, to appoint a committee to prepare a treatise on sheep; which was executed, and distributed gratuitously, with that characteristic liberality of the great nation, which has done so much in science, and in arousing the dormant energies of the human mind, to a positive exaltation of character.

Mr. Gilbert, a member of the French national institute, in describing the Rambouilet flock, says, "but which certainly does not yield in any circumstance to the most beautiful, in point of size, form and strength; or in fineness, length, softness, strength, and abundance of fleece. The manufacturers and dealers in wool, who came in numbers, to Rambouilet this year (1796) to purchase, unanimously agreed to this fact, at the very time that they were combining to keep down the price." He further states, that the average weight of the fleeces of the bucks, when washed and scoured, exclusive of tags and belly wool, was six pounds. In this country, for the market, we do not scour; only wash, and roll up the whole fleece. The amount of fleece is very much dependent on feed. He says, "the comparison I have made with the most scrupulous attenteon between this wool, and the highest priced, of that drawn from Spain, authorizes me to declare that of Rambouilet superior."

The Electoral flock of Saxony, and the Rambouilet flock of France, are of the same rank and degree—selected improved merino. How is it then, when Saxony wool takes the precedence of Spanish wool in the market, that Rambouilet does not come in competition with Saxony? Spain and Saxony are preeminently fine wool growing regions; but neither of them extensively manufacturing; they grow for exportation. France, on the other hand, grows prime wool, which is consumed by her own unrivalled machinery.

In the third instance, he crossed the Atlantic for the new world, and landed on our shore. Here he was greeted with an enthusiasm bordering on distraction, and which can now hardly be realized. In the year 1802, the Hon. Robert R. Livingston of this state, with a discriminating patrictism meriting national reminiscence and gratitude, sent from Spain two couple of select Spanish merino sheep, the first ever brought to this country.* Subsequently by himself, Col. Humphrey, General Derby, Consul Jarvis and others, the country was supplied with merino sheep.

Manufactories were now established, and the production of fine wool promised to be a lucrative business. But these prospects were soon dissipated, and upset, by the versatility of our own government. And the choice merino buck fell from the exalted sale of $1,400, to the degraded estimate of 2 or 3 dollars. In the year 1813, I paid $150 for a Paulaur buck, and $100 each, for six ewes. In the year 1827, I bought the remnants of some choice Escurial flocks, which had formerly been purchased at $200 each, for $2.50 each. And such was the depressed price of wool, that I purchased in the year 1826, cash payment at auction, a package of full blood merino wool, at 25 cts. per lb. and after keeping it two months, I sold it on a credit of 90 days, for 24 cts. per pound.

This extreme vascillation of public sentiment, prostrated the whole interest. Many individuals were involved in total ruin; and small proprietors abandoned the concern. A few, relying on the sufficiency of their own pecuniary resources, on the intrinsic worth of the animal, the estimate of the whole civilized world, for centuries, of its value, only awaited a more protracted exit. From all this, it is plain that there was almost an entire abandonment of the merino in this country.

The result of scientific investigation is, that a conclusion cannot be come at without the whole sheet of facts, embracing the subject in all its connexions.

The establishment of facts by experiments involves almost infinite nicety; requiring the whole amount of human discrimination—unshakled by subsisting theories, preconceived notions, and pride of popularity. An opinion is a mere nullity, separated from the considerations necessary for its formation. And the experience of every day exhibits the imperfection and fallacy of experiments and opinions. Not only the preceding narrative, but the most scrupulous investigation, will concur in the establishment of the subsequent statement.

The Spanish merino has hitherto furnished the best material for the fabrication of fine woollen clothing; and as a natural consequence and matter of fact, has rendered all Europe tributary to her production.

This sheep being transported to Saxony and France, and there received as an acquisition, its peculiar character duly appreciated, nursed with care, preserved in its purity, proved in its excellence—must stand pre-eminent.

Sheep are a defenceless and delicate animal, the prey of wolves and dogs, and subjects of disease; therefore in a domesticated state, requiring the protecting and fostering care of man. And in following the destinies of their itinerant master, are necessarily subjects of acclimation.

The Spanish merinos, with their gradations, have passed this ordeal in our country. The Saxony merino have not in point of time been allowed the same courtesy and indulgence.

Who then, permit me to ask, who, in defiance of the light of science, and the experience of the world for a century, will be disposed to retrograde? Now what shall we do with this chimney corner and barn yard phrase, "*old fashioned merino!*" I am as fond of antiquity as any one else, but I am unwilling to indulge this taste, at the sacrifice of a distinctive perception of things. F.

Wool, the coat of the sheep, will be the subject of the next No.

*We beg leave here to state, that the *first* Spanish sheep were sent to this country in 1801, by M. Delessert, of Paris, one only of which, Don Pedro, figured in the first volume of the Cultivator, page 183, lived to reach land. Don Pedro was kept some time in Ulster county, and afterwards by Mr. Dupont, in the state of Delaware.

P. S. Permit me to commend the letter of Leonard Jarvis Esq. in the last Cultivator, written with much ability and great fairness. It is from such sources that we are to take information. For scientific examination and investigation cannot be profitably prosecuted in an obstinate and controversial way.

"But man we find the only creature
Who, led by folly, combats nature,
Who, when she loudly cries, forbear—
With obstinacy fixes there." *Swift.*

N. B. Tessier was misprinted Fessier in the last Cultivator.

RUTA BAGA—CABBAGE.

Hyde-Park, Dec. 15, 1835.

J. BUEL, Esq.—Dear Sir—In consequence of my communicating, from my limited knowledge of agriculture, my different views on that important subject, from so enlightened an agriculturist as *Lorain*, in his condemning the ridging mode of cultivat on, I take the liberty of forwarding to you the result of the crops of Ruta Baga, and Field Cabbage, (Drum Heads,) cultivated for the use of young stock during winter, by E. Holbrook, Esq. Hyde-Park, on the four furrow ridge system of cultivation, applicable to *his soil*. 742½ bushels per acre, of superior fine turnips, weighing 66 pounds per bushel, 24½ tons and 5 pounds per acre. The seed was sown on the 21st of June; the ridges were hoed only twice; the furrows kept clean by the horse hoe. Although there was very little rain fell from the time of sowing till they were pulled, the largest turnips were found upon the centre of the ridges, a great portion of which measured two feet in circumference. The cabbage, very superior, were planted upon the same system; the plants were set out 2½ feet by 2 feet, containing 8929 plants per acre, producing cabbages, a considerable number of them weighing 16 pounds per cabbage: the whole being well headed, upon a very moderate calculation, will average six pounds per cabbage, making the produce 26¾ tons and 74 pounds per acre. This statement can be testified by respectable and impartial persons. The enlightened professors of agriculture say that the ridging system originated in barbarism, and that the level and very superficial cultivation is the enlightened mode. We are not partial to any mode, but that which will, (according to the quality of the soil,) enable us to obtain the greatest crop with the least expense, and leave the soil in the best position during winter, for a succeeding crop. We solicit the favor, (for the benefit of agriculture,) from those agriculturists who practise the level and superficial mode of cultivation, to communicate through your valuable publication, (the Cultivator,) the result of their practice, with a description of the soil so cultivated.

Yours with great respect, THOS. MIDFORD.

SHORT HORNED CATTLE.

Hartford, Ct. Dec. 13th, 1835.

JUDGE BUEL—I take the liberty of enclosing to you a copy of a letter just received from Mr. Whitaker, the celebrated breeder of Durham Cattle in England.

It is in reply to an order I sent him for the *best* one year old Durham short horned bull he could procure. The breeders of this country will be gratified to learn the estimation and increased value of the best Durham cattle in England, where purity of blood and excellence of pedigree are so highly appreciated.

It will be perceived with regret, that George Coates, Esq. for many years a distinguished breeder of Short Horns, and the keeper of the Herd Book, died Oct. 20th. He had nearly arranged the pedigrees for the second Supplement to the Herd Book, and his son has now undertaken to carry it through the press.

Those gentlemen in this country who are subscribers, will probably receive their copies early in the spring, and it will give additional value to their herds, if their pedigrees have been forwarded in time for publication. Very respectfully, JOHN A. TAINTOR.

"*Burley, near Otley, Yorkshire, Oct. 24, 1835.*

"MY DEAR SIR—I beg to acknowledge the receipt of your letter of the 27th ult I have little doubt of meeting with a superior yearling bull before next May. I have none of a proper age at present, of my own, but I have two well bred cows to calve, to a bull for which I offered 200 guineas; one, of high pedigree, (and the only one of my old family,) to calve about the end of this month; the other is also of good blood and long pedigree, to calve in January. I sent seven bulls and females to New-York, for the State of Ohio, last July; and should I get one for you, I hope it will not have to compete with any of those bulls. I offered 200 guineas for the bull alluded to above, (bred by me, and sold at my sale in September, 1833, for 124 guineas,) but could not prevail on the gentleman to sell. There have been two gentlemen from Kentucky, offering great prices, without buying any thing. Their inquiries were confined to a few small breeders only. I hope to be able to purchase one of the best young bulls for 100 guineas, and perhaps less, as you allow sufficient time to look round. When I made my sale, it was with the intention of abandoning breeding for the public altogether, but many of my friends would not allow me to follow my own inclination, but solicited me to make purchases for them, also urging me to keep a few good animals myself, believing, I suppose, from my long experience, that my judgment was better than their own; and I have so far complied with their wishes, as to select many good ones for them and myself. But I shall not be induced again to let bulls to the public, which is attended with great expense and great mortification, the finest animals in my fold having been let out, and returned mere skeletons. You can, if you please, give me a draft on some house in Liverpool. The greatest risk will be in the transit of the bull from Liverpool to New-York. I am a man with those shipped in July, and he delivered them, he says, in as good order as when they were put on board. But this would be too expensive for one animal, I would therefore suggest the prudence of your speaking to a Captain in whom you can depend, for care and proper attention.

"Mr. Coates, the publisher of the Herd Book, died on the 20 inst., but his son promises the second Supplement shall be out soon after the end of this year, and he is quite competent to the work.

"As soon as I have the pleasure of hearing from you again, I will conclude the purchase of a bull, and place him in my fold. Allow me, if you please, to select one as much under and above one year old as you can, because I may find a superior bull, either under or above your limits, which I should hesitate to buy without your permission. It is usual, I understand, for the shipper to pay for a stand for the animal, provisions, &c. for the passage, and which will cost about £14, and the freight to New-York 25 or $30, and perhaps something more if a man has to serve him. This you will of course take into your consideration, when you hand a credit in Liverpool.

"It is said one of the gentlemen from Kentucky offered 300 guineas for an aged bull, but I hope to be able to send you a young one of the first quality, for about 100 guineas.

"I am with great respect, dear sir, yours truly,
"J. WHITAKER.

"TO JOHN A. TAINTOR, Hartford, Conn."

FACTS WORTH KNOWING.

Mr. BUEL—Sir—In conversation with a gentleman from Saratoga county, a few days since, he communicated to me the following information, which I deem of sufficient importance to occupy a small place in your Cultivator.

He said a neighbor of his, who has a flock of sheep, has lost, by death, twenty-seven out of thirty lambs, and he could not account for the cause. The first symptoms of disease are a drooping, running at the eyes, weakness in the back and loins, and losing the use of their hinder legs, &c.

A person recommended the use of Lobelia, (*Indian Tobacco,*) which he tried by turning a few of his lambs into a field where this plant was found in abundance. It was soon found by the lambs, which they ate freely, nipping it quite close to the ground. In a few days a perceptible difference was manifested, and they became remarkably lively, playing and gambolling about the field as though nothing had ever been the matter with them.

Having proved so salutary and beneficial to the few, he turned in the remainder, which had the same effect, and all became healthy and thrifty sheep.

In order to be certain, and to test the effect and efficacy of the plant more particularly, some of the dried Lobelia was given to some others in the same situation, and produced the same effect.

I have been induced to offer the above for publication, believing that such information should not be withheld from the public.

Yours, &c. CALEB N. BEMENT.

Albany, December, 1835.

MADDER.

West-Winfield, Nov. 24, 1835.

J. BUEL—Sir—Since my communication to you, which you saw fit to publish in the Cultivator last August, I have thought best to send you some further statements in regard to the madder crop, which I consider of consequence to those not acquainted with its cultivation. As I am informed that some have entertained doubts as to the quantity per acre which I considered a fair crop, I will state, that the piece referred to was less than an acre, but yielded at the rate of 5,760 lbs. per acre. This fall I harvested a small piece, which I purchased on the ground, that yielded at the rate of 8,000 lbs. per acre. This was cultivated in the usual way in hills, with no more than ordinary attention. I consider 5,000 lbs. to be only a middling crop. A much greater quantity of madder can be raised on an acre by being planted in beds, as I described in my former letter, than in the old method of planting in hills. The reasons are these. In hills, the roots are confined and have not a chance to spread. In beds, the tops can be covered with earth, and these become roots, which send forth other tops, and innumerable small roots from the joints of the tops which are covered up, and these form in the beds a compact mass of roots, by the time the crop is ready to harvest. It will be understood from my former communication on this subject, that the operation of covering the tops is to be repeated several times. I would here mention, that the last covering should not be omitted later than the first of September, as there will then be time for the tops to send forth shoots ready to come up early in the spring. In this way the whole growth of the top is saved, and converted into roots. The madder which I planted last spring in beds, promises better than any I have before seen.

When land is selected for madder that needs manuring, the best plan for preparing, is to plough it in small lands, the width that the beds are calculated to be, from centre to centre. In the middle of these the manure should be dropped just as wide as the beds are to be, and covered

deeply with a plough—six furrows are usually enough. If more manure is needed, it can be carried between the beds and there dropped. Fourteen feet from centre to centre is none too wide for the beds. They should occupy about five when they are first planted, but soon spread to six or seven.

Roots that are designed for planting should be kept as much as possible from the air; and if they are buried during winter, they should be covered with dirt without straw. Freezing does not hurt them if they are not exposed to the atmosphere while they are thawing.

I have lately made a purchase of all Mr. R. Bronson's seed, and can supply those wishing to plant next spring, to the amount of 300 bushels. Prices the same as stated in the August number of the Cultivator, second volume. Yours, very respectfully,

HERBERT WOODBERRY.

REAL ESTATE AS AN INVESTMENT.

Perhaps at no period of our history, as in the last year, has there been so great a demand for money, or greater facilities for obtaining it.—Every means that man's ingenuity could devise, have been tried to make it as speedily and abundantly productive as possible; and whilst a few have succeeded to a certain extent, others have been unsuccessful. Upon the whole, there has been an over-exertion for great profits, and in many cases, where they have been made, it has been at the expense of truth, good example and honesty. Stock-jobbing, or buying and selling public stocks, has been carried, in this country, to an inordinate extent; and the frequent fluctuations in price admonish us, that there are dealers in the article who have little to lose, and who use every art to circumvent those that are disposed to buy, and have money to spare. Upon the whole, it is an unsafe business for a moneyed man to engage in, although some kinds may be profitable for capitalists to hold. Bank stock, other than that which has been most sold this last year by the brokers, has been profitable, and not so fluctuating in price as the rail-road stocks, and their real value has been better ascertained. I presume, as an average, they have divided the last year at least ten per cent, and they probably will, in future, have still more enlarged dividends, if their discounts are not curtailed, or their numbers multiplied at the ensuing session of the Legislature.

The rate of interest on bonds and mortgages, being settled by law, has been unaffected by the general spirit of speculation and activity which has manifested itself in all kinds of business, and is still considered by capitalists a profitable, and, with common prudence, is, always a safe investment. It is true, the rate of interest is not so high as the profits that have been realized in many cases from holding stock; but from the nature of the security, which in your own judgment is ample—retaining that security in your own hands—subject to your own oversight, and under your own control, mortgages are a safe and beneficial investment, both for debtor and creditor. Still, for an active man, an investment of money in real estate, where the products are taken instead of interest, and where, by good management, the farm is rendered more productive, is, all things considered, probably the best investment of money he can make. As a security, it partakes of the nature of a mortgage, while as a property, it is subject to his immediate control. The question may be asked, can he realize the legal interest from the products? I answer, at this time of day, with the advance of the art, it must be miserable farming indeed that will not do that. If I should rate the products of farming at ten per cent, upon the present price of land, after deducting all expenses, I am satisfied, from my own experience, and that of my neighbors, it will not be putting it too high. Were this a proper place, I could give many instances in which these profits have been nearly doubled; but it is not necessary at this time to substantiate this statement by facts—these, if necessary, can be subsequently made—yet, thus far, we have only a part of the profits. Who ever heard of a man buying and selling a farm at the same or a lessened price? It is so well understood that the seller is to have more than he gave, that is has almost become a settled principle in the purchase of real estate. This per centage is sometimes very high, but in almost all cases, it adds materially to the profits of the investment. Besides, it is correct in principle; a tract of land under judicious culture, must be enhanced in value at least five per cent per annum,* and the purchaser of course can afford to pay more for it, at each successive sale. We adopt this as a general rule, to be varied, however, as the peculiar circumstances of each case may determine. I think it must be conceded as an established fact, that nine-tenths of all our property has been derived from this source alone, the increased and increasing value of real estate. Neither is this value fictitious, as culture gives large products, which in turn induce and enable us to pay more for the soil. A.

* Our correspondent's remarks will hold good in regard to all well cultivated districts; but upon many, the light of agricultural improvement has hardly yet dawned—the old system of depletion is still going on, and the soil depreciating in fertility and value.—*Conductor.*

Chemistry applied to Agriculture.

From Chaptal's Chemistry applied to Agriculture.

INFLUENCE OF HEAT AND LIGHT UPON VEGETATION.

The changes of temperature experienced by the atmosphere in the course of a year, are so great, as to cause some liquids to pass alternately either to the solid or aeriform state, and some solid bodies to become liquid. The natural effect of heat upon these bodies is, by dilating them, to weaken the force of cohesion which unites their molecules, and, by facilitating the action of chemical affinity, to enable them to enter into combination with foreign bodies. Thus heat renders the juices of plants more fluid, and facilitates their circulation through the cells and capillary vessels; and by giving activity to the suckers of roots, enables them to draw from the earth the juices necessary for their nourishment.

Above a certain temperature, heat, by promoting evaporation, causes the juices of plants to become thickened and dried in their organs, and thus vegetation is arrested, and life suspended. This effect always takes place during great heats, when neither rain, dew, nor irrigation, can sufficiently repair the loss occasioned by evaporation. This effect would be more frequent, if provident nature did not employ means to moderate the action of heat.

The first of these means is the transpiration of the vegetables themselves, which cannot take place without carrying off a large portion of heat, and thus preserving the transpiring body at a temperature below that of the air. The second means is found in the organization of the leaves, which are the only parts of a plant where transpiration take place. That surface of leaves which is exposed to the direct rays of the sun, is covered by a thick epidermis, which resists the calorific rays. In herbaceous plants, as in the stalks of grasses, this covering is composed principally of silex. In other plants it is analogous to resin, wax, gum or honey; whilst the epidermis, which covers the opposite sides of the leaves, is fine and transparent. It is by this, that transpiration and the absorption of nourishment from the atmosphere are carried on. If we should reverse the order of things, and present the under surface of a leaf to the rays of the sun, we should very soon see that it would make great efforts to resume its natural position.

When a plant is dead, or rather, when an annual plant has fulfilled its destiny, giving assurance of its reproduction by the formation of its fruit, the action of heat and of the other chemical agents is no longer modified by any of the causes of which I have just spoken, and the plant receives their impression in an absolute and unmodified manner. When the temperature of the atmosphere sinks below a certain point, the fluids in plants become condensed, the movement of the juices is retarded, the activity of their organs languishes, and is at length suspended, until restored by the return of heat. The action of the atmosphere upon plants, when deprived of its due proportion of heat, is, however, modified by the emission or disengagement of caloric, which is always given out when liquids are condensed, or solids contracted; and this occasions the temperature of plants, during the winter, to be always a little higher than that of the atmosphere.

It sometimes happens that the temperature of the atmosphere sinks so low, as to produce fatal effects upon plants by freezing their sap, and thus occasioning their death. This effect does not always depend upon the intensity or degree of cold to which they are exposed, but upon particular circumstances. I have seen olive trees resist a temperature of 22°.2 Fahrenheit, and perish from that of 23°.6, because in the last case the snow, which had collected upon the branches of the trees during a night, was dissolved the following day by the heat of the sun, and the wet tree was exposed during the succeeding night to the action of 23°.6. There is nothing more dangerous for corn and grasses, than those frosts which follow immediately after a thaw, because the still wet plants, not being deeply rooted in the ground pulverized by the frost, have no means of defending themselves from the effects of the cold.

Though the action of light upon vegetation does not appear to be so important as that of the other fluids of which I have spoken, it is not, in reality, less so. Plants which are raised in the shade, or in darkness, are nearly or quite without colour, perfume, taste, or the firmness of texture of those that are exposed to the direct rays of the sun; and if the luminous fluid does not combine with the organs of plants, we cannot deny that it is a powerful auxiliary in their combinations.

When we reflect upon the influence which the atmosphere exercises over vegetation, and over the principal operations which are carried on in rural establishments, such as fermentations, the preparation of various productions, and the decomposition of some substances, in order to apply them to particular purposes; we are astonished at finding nowhere any of the simple and unexpensive instruments which announce its changes every moment.

I do not propose that delicate or complicated instruments should be provided; but I wish to find on every farm an hygrometer, to ascertain the humidity of the atmosphere, a thermometer to indicate the changes of temperature, and a barometer to determine the weight of the atmosphere. This last instrument would be particularly valuable,

as predicting the changes of the weather; the rising of the mercury announces the return of dry weather, and its sinking warns us of rain and storms. We can regard these variations but as signs; but they are signs much more certain than those which country people derive from the changes of the moon.

PROPERTIES OF MOULD.

Land owes its fertility mostly, if not wholly, to the presence, in a greater or less abundance, of principles analogous to those constituting mould. These principles are furnished by manures, and by the decomposition of plants; but each harvest causes a diminution of them, a part being washed away by rains, and a part absorbed by the crops which are raised; thus the soil is deprived by degrees of its nutritive qualities, till at length nothing remains but an earthy residuum, deprived of its nourishing juices, and completely barren; it is to restore its fertitity that land must be manured afresh, after having yielded several crops.

DEWS—*Suggestions to render them beneficial to vegetation.*

The aqueous vapors suspended in the air begin to be condensed and precipitated at sunset, and with them is deposited the greatest part of the emanations which have risen from the earth during the day; these exhalations, though beneficial to vegetation, are almost always injurious to man, and it is not without reason that he fears and shuns the night damps. In southern climates, where the heat of the sun is more intense, and rains less frequent than in northern, vegetation is supported by the dews, which are very abundant. In order that the dews of night may produce their best effects upon vegetation, it is necessary that the soil should unite certain qualities, which it does not always possess.

When the soil is hard and compact, and forms by the action of the air an impenetrable crust, the dew is deposited upon its surface, and evaporated by the rays of the sun, without having moistened the roots of the plants, or softened the earth around them; so that of the organs that serve to convey nourishment to the plants, the leaves are the only ones benefitted by the dew, while the roots, which are the principal vehicles of nutriment when the plant is fully developed, are not in any degree benefitted by it. It is necessary, in such cases, that the soil should be softened, lightened and divided, so that the air may convey the water with which it is charged, to the roots of the plants, and to every part of the earth surrounding them, to a certain depth; then the plant can imbibe, through all its pores, the reviving moisture; and that which is received by its roots is more lasting than that which it absorbs in any other way, because the roots being sheltered from the direct rays of the sun, evaporation takes place less rapidly, and the moisture is retained, whilst the leaves are speedily dried by the heat. Besides, that earth which is most easily affected by the dews, yields most readily to the action of roots, whether it be to fix the plant firmly by their extension, or to draw from the soil its nutritive properties.

This explains, in a natural manner, the origin of a custom observed by all agriculturists, and of which all acknowledge the advantage.—When vegetables, such as peas, beans, potatoes, and other roots, are sowed in furrows at equal distances from each other, the soil in the invals is howed, or dug, with the utmost care, and thus rendered light, soft, and permeable to the air, whilst at the same time weeds, which would be hurtful to the cultivated plants, by depriving them of nourishment afforded by the ground, are destroyed, and the soil rendered more fit to receive the rain, and convey it to the roots. I do not deny that these benefits are real, but I hold them to be secondary, and subordinate to the advantage derived from opening access to the air, and permitting it to deposite its dews upon the roots, and upon the earth in contact with them.

I have uniformly observed the effect of this method to be equally speedy and favorable in the cultivation of beet roots, and I have never employed any other, to restore their vegetation to its freshness when it becomes yellowish and drooping; in three or four hours it will become of a beautiful green, and the leaves spread themselves out, although no rain may have fallen; and this often when the soil had not contained a single weed. I have observed the same effect produced upon the other culinary roots.

Elements of Practical Agriculture,

By David Low, Professor of Agriculture, &c.

DISEASES OF SHEEP.

The diseases of these valuable creatures are sometimes of a very formidable nature, and baffle all the means of remedy which are known to us. Of these diseases the most dreaded is *rot*, which often extends over whole districts of country.

It is known that this disease is favored or produced by a humid state of the soil and atmosphere. It is in wet seasons that it prevails the most, and is the most fatal. By draining land the tendency to it is lessened or taken away. Often sheep are rotted by pasturing on the wet parts of the farm, whereas if kept from these parts they remain free from disease. Nay, a single sheep that has a disposition to pick up its food in moist places will die, while the others will not be affected.

The animal affected does not all at once show symptoms of disease; for sometimes it remains a considerable time in apparent health, and long after it has been removed from the place of infection, droops and dies. Sheep are every year purchased in seeming health, and yet after a time they are found to be affected. A moist and even luxuriant autumn is dreaded above all things by the owner of sheep; for the seeds of infection are then often spread to appear in the following spring, or after the lapse of a longer period.

The signs of rottenness in sheep are familiar to all shepherds. The animal becomes emaciated, its eye becomes dull and glassy, a black purging generally takes place, the wool on being pulled comes readily away from the skin, the breath becomes fetid, and the urine is small in quantity and high coloured. As the disease proceeds, the skin is marked with spots, and the emaciation increases continually, until the sheep dies. In short, the term rot expresses truly the state of the animal. The disease proceeds with various degrees of rapidity; sometimes it attacks the entire flock suddenly, and sometimes its progress is gradual, and it affects only a given number of individuals. Graziers often avail themselves of the period of the animals beginning to decline to rid themselves of an infected stock. During the first period of being tainted, the sheep have frequently a strong tendency to feed, and if killed in time the flesh may not be perceptibly affected.

In all cases of rot the disease is accompanied by a morbid state of the liver. During the progress of it, the fluke, a small animal, *Fasciola hepatica*, appears on the parts connected with the liver and the gall-bladder. At first the number of these creatures is small, but as the disease advances they increase, and before death are generally very numerous. In the last stage of this disease they have extended to the stomach and other parts.

Frequently the disease terminates favorably, the inflammatory action going off without destroying the parts. But even in this case, the taint is rarely removed, and years afterwards, when the animal has been fattened and killed, the liver has been found to be diseased, the flukes being in great numbers.

The best preventive of rot is to render the soil dry; hence on all sheep pastures, the importance of draining. But should the disease, in spite of all precautions, appear, then we should, without loss of time, remove the sheep to a drier pasture, and supply them liberally with proper food. It is only, however, in the early stages of the disease, that a change of food will usually avail. If the disease has proceeded to a considerable extent, even though it should not have evinced itself by any great change in the external appearance of the flock, the animals will often perish hourly amidst the most wholesome food with which they can be supplied.

Of all the medicines that have been proposed for this fatal disease, salt alone is that whose virtue has been established by any satisfactory testimony. The beneficial effect of salt in the prevention and even cure of rot, has been confirmed by the observation of farmers in this and other countries.

Salt indeed will not in all cases prevent or cure the disease; for sometimes the tendency to it from particular causes is too strong to be counteracted, and, when it has once attacked the flock, too violent in its progress to be arrested. But though salt is not a specific, it is the best means of remedy with which we are acquainted.

If salt be placed near the animals in troughs or on flat stones, they will eagerly lick it, and when disease threatens them, it may be given to them in any quantity in which they will consume it; for it is then seen that they are obeying a natural instinct in having a recourse to the remedy; and in a wet season when disease may be apprehended, no one should grudge the trouble of so cheap and simple a precaution.

Much has been written upon the subject of this disease, but all that has been written has nearly left us where we were with regard to the remedy. It had been long known that wetness of the soil, however produced, gave rise to rot; that the best preventive was pasturing on dry ground and giving sufficient food, and that the best remedy where disease appeared was a change of pasture. To these results of old experience is to be added, the using of salt.

Besides the rot properly so termed, sheep are subject to inflammatory putrid fevers, which occasionally seem to be epidemic; and these are sometimes termed rot. Another disease to which the term rot is applied, is called the hunger-rot. This arises from the want of sufficient food, which produces an unhealthy state of the viscera, leanness, and death. In this disease the wool falls off, and hence it is sometimes called the pelt-rot.

Another disease, arising from a different cause than the rot, but like it ending in emaciation, and the death of the animal, is provincially termed *pining*. This disease is accompanied by a costive state of the animal, whereas the rot is never accompanied by costiveness; and in the rot the liver is always affected, while in the pining the liver is sound.

This disease seems to arise from the want of exercise, and from the

animals feeding on very dry pastures. Before the extensive draining of the pasture-lands, where it is now found, the disease was unknown. The rot was then common; but with the draining of the lands the rot disappeared, and this new disease took its place. The former practice of management in the districts where the disease now prevails, was to keep the sheep in flocks which were moved about along their allotted range of pastures. They are now, under a more approved system of management, suffered to spread over a large extent of pasture; and thus they are not obliged to take exercise, but are allowed to feed more on a given spot of ground.

A change of place and food is the preventive or the remedy; and if a change of food is resorted to in time, it is generally sufficient to arrest the progress of the disease. Even a removal to a fresh heath will sometimes accomplish the purpose, but the proper and effectual remedy in all cases is a change to a more rich and succulent pasture. The disease is sometimes very fatal, destroying entire flocks like a pestilence.

The braxy is similar to some of the diseases mentioned in its violence and effects; but it arises from different causes, and affects the animal in a different manner. Under the general term braxy, several diseases or rather varieties of the same disease seem to be included. But in all cases when the bodies are opened they exhibit marks of inflammation.

The progress of this disease is so sudden and violent, that even if we possessed a remedy, it would generally be too late to apply it. Of the remedies employed, bleeding seems to be that which the nature of the disease points out. This disease seems generally to be caused by bad food, and the most efficient preventive is known to be good feeding. Turnips or other succulent roots given to young sheep feeding on natural pastures are always beneficial; and it is to be observed that in proportion as the treatment of sheep in a country has improved, this dangerous malady has diminished.

Diarrhœa and dysentery are likewise diseases of sheep. Diarrhœa is frequently produced by too sudden a growth of grass in spring, and it most frequently affects young sheep. It may be generally cured by removing the animals to drier pasture; and a little corn may be always given with good effects. Dysentery is a more serious disease, and is often very destructive. It is believed to be infectious, though upon very questionable grounds.

Sheep are liable to various cutaneous diseases. The principal of these is termed scab; and it is indicated by extreme itching and eruptions of the skin. When introduced into a flock it may be attended with very serious effects, unless checked by efficient remedies.

The most common remedy for the disease is sulphur mixed with some unctuous substance to fix it on the skin. One of the best recipes perhaps is a decoction of tobacco and spirits of turpentine, with the addition of a little soft soap and sulphur vivum. The decoction of tobacco may be obtained by boiling the tobacco in brine or salt water. The liquid when prepared is applied from a vessel like a teapot with a spout, or from a bottle with a quill passed through the cork. A person lays the wool back in lines so as to expose the skin, and pours out the liquid along the lines upon the skin. But when the distemper is very violent, a mercurial preparation may be required. This is now to be obtained in apothecaries' shops, under the name of sheep-ointment. It is made in balls, and when used it is dissolved in oil, and applied to the skin of the animal.

Sometimes infected sheep will find their way into the best managed flocks; but every care must be taken to keep the disease from breaking out, or to cure it as quickly as possible when it appears. The infection of a diseased flock is left behind it upon the hedges and pasture-fields, and therefore precaution is to be used before a fresh flock is turned into fields where infected sheep had been recently feeding.

Another disease of sheep is the foot-rot, which is an inflammation of the foot, followed by an ulceration and destruction of the hoof. The disease chiefly prevails in wet seasons, or in soft grounds. It is a very painful disease, causing the entire lameness and loss of condition of the animal. Certain grounds are noted for communicating the foot-rot; and as it appears amongst the pasturing stock season after reason, such grounds are commonly said to be infected with the foot-rot. The opinion that it is of a highly infectious nature is almost universal amongst farmers and shepherds. But however circumstances may seem to favour this opinion, it is more consistent with the effects observed to regard it as connected with the state of the pasture-grounds.

Although painful, and destructive to the good condition of the animal, this disease is not absolutely fatal, except under entire neglect, in which case the animal becomes unable to seek his food, crawls upon his knees, and, worn away by exhaustion, perishes. But if early attention be paid, the disease admits of remedy. In the first place, let all the infected part of the hoof be pared away, and the ulcerous matter removed, and then let the foot be washed with soap and hot water, and let the surface be dressed with some caustic, of which the best is muriate of antimony. In incipient cases, by simply paring the hoof and cleansing it with soap and water, and then dipping it in boiled tar, the progress of the disease will be arrested.

The next disease to be mentioned is of frequent occurrence. This is by latils, staggers, or water-in-the-head, as it is frequently termed. The cause of this disease is in an animal, *Tænias globulus*, which finds its way into the brain, where it enlarges in size, and which, if not removed, ultimately destroys the animal. This creature resembles a round vesicle filled with water, and hence it was long supposed to be water, and the disease, in consequence, termed water-in-the-head. The hydatids, though found chiefly in the brain of sheep, is found also in other parts of the body, as the liver and spleen.

When the hydatids is in the brain, the animal affected shows great symptoms of distress; he leans his head to one side, mopes by himself, continues turning round, and finally dies. The remedy for this disease is to reach the hydatids, and to extract it, or merely to perforate it in such a manner as to destroy its vitality. When it is situated at the surface of the brain, the part feels soft, and it is easy to reach it by a common awl or gimlet, or by a species of rude trepanning, which may be done by a common pen-knife. A little circular portion of the skull is to be cut, and raised up like a lid, a portion of the skull being left for this purpose. The hydatids being exposed, is to be pulled out by pincers, and the fluid absorbed by a sponge. The skull is then to be replaced, and dressed with common tar put upon a piece of soft leather.

When the hydatids is situated in the ventricle of the brain, it may be reached by a wire thrust up the nostrils. Some shepherds are very dextrous at this operation, and rarely fail in effecting a cure.

Sheep are liable to the attacks of various animals. One of these, a species of aphis, termed the sheep-louse, is very common, and chiefly prevails where the sheep are in an unhealthy condition. It is of a flat form, and attaching itself to the throat and other parts, occasions much irritation. Tar, turpentine, or tobacco liquor, are the substances chiefly used to destroy this animal, and any simple mercurial preparation is effectual.

But the most pernicious enemy that attacks sheep is the common sheep-maggot, the larvæ of a species of flesh-fly. The fly having deposited her eggs on the skin of the sheep, the larvæ are hatched in great numbers, and grow with amazing quickness. They commonly appear about the root of the tail, or wherever filth has allowed the fly to attach her eggs, and thence they spread over the entire body, consuming the skin, and eating into the flesh. The sheep, when attacked, manifest a strong sense of suffering. They frequently run with violence, until at length overpowered and exhausted, they lie down and perish.

It is in the moist and warm seasons of the year that the sheep-maggot is chiefly produced. Constant vigilance is then demanded on the part of the shepherd, so that all foulness of the wool shall be clipt away; and the sheep must be daily inspected, lest this dangerous enemy establish itself. The maggot is effectually destroyed by a solution of corrosive sublimate, and in its early stages by less potent applications, as by urine and lime.

We must remember that the sheep, in his domesticated state, is yielded up to the care of man; his natural instincts are blunted, and he is unfitted to use those means of preservation which in his wild state he might possess. He is the prey of a multitude of enemies, against which he has no defence; and the more artificial his condition is, the more is he dependent on our care.

Miscellaneous.

From the New-York Farmer.

NOTES ON TRANSPLANTING.

"The functions of the root are to fix plants in the earth, and to absorb nourishment from it. This absorption takes place almost exclusively by the extremities, which consist of a lax coating of cellular tubes, lying on a concentric layer of woody fibres, in the midst of which is placed a bundle of ducts." —*Professor Lindley.*

We wish to call the attention of *some* horticulturists to the facts stated in the above paragraph, not as something new, but as a fact not generally known, or if known, is neither heeded nor acted upon. It has doubtless been observed by every vegetable physiologist who has called into his minute investigations the assistance of the microscope, how beautifully the *extremities* of the small fibrous roots are adapted to the introsusception of the food of the plant. Almost every common planter attaches an importance to these fibrous roots, but yet not that importance which they so eminently deserve. It is the common opinion of such planters, that the absorption of vegetable food takes place throughout the *whole surface* of that portion of the plant which is usually termed the root; and provided they retain a certain *quantum* of that necessary member, it is with many apparently a matter of indifference, which particular part is lost, mutilated, or remains whole. Persons engaged in these operations, should impress upon their minds the fact that it is only the *extremities* of the roots of plants that serve the purpose of collecting and assimilating the material which is so necessary to the support of the branches, and that the larger parts of the roots only serve as channels through which this support is carried to the branches.

In transplanting, we would lay it down as a maxim, that neither root nor branch should be mutilated. It is remarkable that persons of considerable experience act in direct opposition to this rule, and do not give the subject sufficient reflection to convince themselves of its truth. No one has a doubt of success when he is transplanting a young tree, and the very reason of that success is the fact that he transplants the tree *entire*. It is a common remark, when speaking of trees of a certain size, that they are too *large* to be transplanted. We do not speak of such as are too large on account of their unwieldiness and bulk, but simply such as the experience of these planters has convinced them that they cannot transplant with safety. Why are they too large? Is the plant or tree subject to any other natural laws? Certainly not; and he does not succeed so well—the operation does not proceed with such sureties of success, solely because it is not conducted in the same manner. The whole course, for some inexplicable reasons, best known to the planter himself, is conducted upon entirely different principles. In the first case, the subject is small—the plant is entire—not a root or branch is amputated. But let him transplant a *large tree*, and the routine is quite different: half at least of the roots are cut off, either as a matter of convenience or from principle; the extremities of the roots are often utterly disregarded, being either severed entirely, or so much bruised and lacerated as to be incapacitated from performing the services for which nature intended them. One would think that to any reasonable person such a destruction of the essential organs of the plant would quite suffice. Not so with our transplanter. He has reduced the *root; ergo*, he must reduce the *top*. Accordingly, he takes his knife in hand and cuts off at least one-half of the branches and consequently their accompanying leaves—he reduces the top to goodly proportions, and elegantly removes every branch which has the misfortune to displease his fastidious eye. "Leaves," say the vegetable physiologists, "serve to elaborate the sap—they expose it to the light and air, and cause it to undergo peculiar chemical changes before it is fitted to enter into the permanent composition of the plant; they are therefore essential organs." This is indeed a different view of the case from that presented to you by many transplanters. "Leaves and branches," say they, "serve to consume a portion of the sap; each leaf and each branch draws away a portion of nourishment from the other, *therefore*, if I cut half of the branches away, will not the remaining branches receive double the portion of sustenance they otherwise would?" Admirable logic! Every one knows the analogy which exists between vegetable and animal life. But would any person in his senses think of cutting off a child's arm because it had had the misfortune to lose its foot? Would any one think of amputating one leg of a beast in order that the others might receive more nourishment?

Nature, when left to herself, produces no more organs than are necessary for the proper existence of her subjects. It is obvious, therefore, that the removal by art of any considerable portion of those requisites cannot but be attended by a consequent diminution, for the time, of the vital powers. How necessary, then, does it appear to a reflecting person, that when so important an era in the life of a vegetable as the forcible transplanting of its whole body takes place, that every essential member of that body should be preserved entire. If the roots, leaves, and branches of a tree are *essential* to the thriving condition of that tree whilst standing in a robust state in its native site, are not those organs still more essential to enable it to recover the shock of being transplanted. The planter above referred to, will, in fact, tell you this himself. Ask him which of the two trees transplanted—the small one, with its limits and roots entire, or the larger one, with his system of decapitation upon it—which of them was afterwards the most thriving. He will tell you without hesitation that the first grew luxuriantly at once, and that the latter was perhaps several years in *recovering*. "But," says he, "this is owing to the greater age of the larger one." Not at all; recent experiments have proved conclusively that trees of almost any size may, by attending to the principles here pointed out, be transplanted with safety, and continue in a state of high luxuriance and health; and I confess that it is a strong proof of the influence of habit and custom, that persons of considerable experience, with the facts before their eyes, still go on in the old way.

I have been induced to to these remarks principally from witnessing the recent transplantation of forest trees throughout the country. In this case, indeed, the system is carried to the utmost of its limits. Mutilation and decapitation are the grand principles of its professors; the beautiful *trees* which *were*, after reduction into the *bare poles* which *are*, both in their appearance and success, such excellent examples of the good *taste* and sound *principles* of the proprietors, that no correct horticulturist can view them without feeling sentiments of horror for the former and pity for the latter.

A. J. DOWNING.

Newburgh, N. Y. Feb. 1835.

Rule for determining the weight of hay.—Hay in the field rick, says Low, weighs somewhat better than 112 lbs. the cubic yard; after being compressed in the stack, it weighs from 140 to 180 lbs. and when old 200 lbs.

Young Men's Department.

FROM A FATHER TO HIS SON—No. 4.

POLITICS.

Your personal happiness is intimately interwoven with the welfare of your country. You are one of the *guardians* of that welfare. The high *privileges* which our constitutions confer on us, exceeding those of any agricultural people in the world, imposes a solemn *obligation*, to endeavor to preserve those constitutions in their spirit and purity. Power is ever corrupting, whatever name be inscribed on its banner. It is the innate propensity of man to grasp and abuse it; and the vigilance of a free people must be as unceasing as the flux and reflux of the tide, to counteract and restrain this frail propensity. Seek then to make yourself acquainted with the principles of your government, with the duties of its officers, and the personal rights and responsibilities of a freeman, that you may be capable of rendering justice to all, and particularly to the commonwealth.

But though I would have you to be a politician, and an intelligent one, I would dislike to see you a political zealot. Parties are salutary in a free government—so is fire in our dwellings; but both become terrible scourges when they get beyond our control. One destroys towns, the other subverts good order in society, and leads to anarchy. It is the office of prudence to abate their violence, and to restrain them within salutary bounds. The great body of the American people have a common interest and a common object; and we should not witness so much of violence and ill-natured abuse, but for the chesnuts which the drones, too lazy to gather from the bur, are endeavoring to snatch from the public basket. The rogues! they get the people by the ears, about straws, that they may the more readily bear off the spoils. Like boys scrambling for coppers, however, while some are enabled to stuff their pockets, some are less fortunate, while others get nothing but bruised knuckles.

Wear not the collar of *party*. The term is synonymous with men—who change. Give your fealty to principles, which do not change. The greatest tyrants have commenced their career as champions of freedom; but truth and justice have remained the same in every age. A party is no longer entitled to your support, than it continues to be guided by principles which first won your support. By assenting to its errors, you invite new impositions, which human passions, unrestrained, are ever disposed to indulge in. How well this is illustrated in parental government. Many a boy is ruined through the impunity which seemingly applauds his first transgression.

Become not a medicant upon public charity. *Ask not* for *office;* and if tendered, take it not for the gain, but as a duty. He that wants industry or talent to provide for himself—will bring neither to the performance of public duties. He who *depends* upon political office, unless unfitted by age or misfortune to provide for himself, surrenders a valuable franchise—the right of opinion. He depends upon the caprice of fickle men, whose creed he must follow as a requital for the boon he receives. I do not apply this remark to the higher officers of government; and I admit there are many exceptions to its application in the subordinate departments. It *is* true, however, that in most cases, compliance with the rule is expected and rendered. This servile dependence upon the favor of power blights and withers the most ennobling faculties of our nature. Shun it as the enemy of your happiness; and if you are called upon to discharge a public trust, do it fearlessly, *for the good of the whole*, preferring the consciousness of having done *right*, to that of having promoted the views of a *party*. The free exercise of our judgment, in relation to public men and public measures, is the distinctive and ennobling characteristic of a freeman; and he who surrenders or prostitutes this right, to gratify his cupidity—from a servile fear of giving offence, or a mercenary hope of reward—would sell his country for an office—he ceases to be a freeman. Like the chamelion, he takes the hue of whatever object that for the time administers to his wants.

In your political, as in your private affairs, permit not the officious interference of others to lure you to do what your judgment disapproves; and while you are thus tenacious of your own opinions, seek not, under false pretences, to mislead your neighbor. Waste not your time at political meetings. They are generally got up by the interested and the indolent—the office seeker and the parysite. These meetings, if *often* frequented, lead to bad habits, and too frequently associate you with bad company; take you from your business and your family, and inflame passions which are at war at once with your quiet and prosperity in life. Look about you, and take warning from the condition of meddling officious politicians, who neglect their own to take care of the public concerns.

I subjoin, for your instruction as well as amusement, the soliloquy and plea of a *noisy* politician, whose prototype may be found in almost every town and village.

"Peter Brush was in a dilapidated condition—out at elbows, out at knees, out of pockets, and out of spirits, and out in the street—an 'out and outer' in every respect He sat upon the curbstone, leaning his head upon his hand,

his elbow being placed upon a stepping stone. Mr. Brush had for some time been silent, absorbed in deep thought, which he relieved at intervals by spitting through his teeth, forlornly into the gutter. At length, heaving a deep sigh, he spoke

"They used to tell me—put not your trust in princes—and I hav'nt. None of 'em never wanted to borrow nothing of me, and I never see any of them to borrow nothing of them. Princes! pooh! put not your trust in politicianers! them's my sentiments. There's no two mediums about that. Hav'nt I been serving my country these five years, like a patriot; going to meetings and huzzaing my daylights out, and getting as blue as blazes; hav'nt I blocked the windows, got licked fifty times, carried I don't know how many black eyes and broken noses, for the good of the commonwealth, and the purity of our illegal rights, and all for what? Why for nix. If any good has come out of it, the country has put the whole of it in her pocket, and swindled me out of my earnings. I can't get no office! Republics *is* ungrateful! I did'nt want no reward for my services. I only wanted to be took care of, and have nothing to do; and I've only got half nothing to do! Being took care of was the main thing. Republics is ungrateful, I'm a staggered if they ain't!"

"Come with me," said Charley, helping him along. "I'll take care of you. But what made you a politicianer—hav'nt you got a trade?"

"Trade! yes; but what's a trade, when a feller's got a soul—a whole soul? Trade! I loved my country, and I wanted an office—I did'nt care what, if it was fat and easy. I wanted to take care of my country, and I wanted my country to take care of me. Head-work is the trade I'm made for—talking, that's my line. Talking in the oyster cellars—in the bar-rooms, any where. I can talk all day, only stopping for meals, and to wet my whistle. But parties is all alike. I've been on all sides—tried 'em and I know—none of 'em gave me any thing, and I've a great mind to knock off and call it half a day."

Pleasures and advantages to be derived from the study of Natural History.

"Natural history, though it holds out no splendid reward to those who pursue its studies, will not fail to supply its fair proportion of contributions to the general welfare. Natural philosophy has furnished its light-houses and life-boats for the ocean, its lightning rods and steam-engines for the land, and its safety-lamp for those who explore the regions below. Chemistry has supplied its bleaching inventions and its medicines, not to speak of the more questionable blessings of dry bone soup, linen rag sugar, and saw-dust bread. Natural history, though it seems to content itself with simple descriptions of nature, forbearing to investigate its laws or the action of its powers upon each other, will continually unfold new productions and properties in all its departments; new uses for animals, vegetables, and minerals, and ways in which they can be applied to the benefit of man. It will teach men to employ nature against itself, and to neutralize many of its evils, shewing how it furnishes the antidote as well as the bane; shewing, in fact, that it never puts difficulties in the way of man, without some corresponding advantage which it rests with them to discover. Of course it will exact something in return; it will require men to look round them with observing eyes, and to pay at least sufficient attention to nature, to know how to estimate the blessings which it bestows. But, for all this it will abundantly reward him; it will make him happy, by affording something to fill up the vacancy of his mind and his heart. If the mind ever rests, its calm is not clear, transparent repose, but corrupt and unhealthy stagnation, and this is a danger to which men are exposed much oftener than they know. We are unconscious of our inaction of mind, because revery is taken for thought; a man never looks so profoundly intellectual as when he is thinking of nothing. A solitary walk,—a seat by the evening fire, are said to be favorable to thought, when sometimes, on such occasions, not a thought passes through the mind for hours; thought being the action, not the dreamy repose of the mind. Now when this science changes the thoughtless into observers; when it teaches them to look with interest upon the insect, whose instinct is so perfect and sure in all its operations; when it makes them see beauty in the frail loveliness of the flower, which now they crush beneath their feet; when it leads them to examine the rich plumage, or listen to the song of the bird, instead of destroying it with wanton cruelty, it renders them a service which cannot be over-estimated; it opens fountains of enjoyment for them, which will never cease to flow.

In this point of view, we have no doubt that these studies might be employed as an efficient instrument of moral reform. For it cannot be questioned, that most men are driven to their lawless indulgence, not by their love of it,—not by the strength of the temptation,—but by the horrors of a vacant mind, which induce them to seek this relief from themselves. The force and resistlessness of the temptation consist, not in its own attraction, but in the unhappiness of a mind preying upon itself, which eagerly catches at any means of relief for the moment, without thinking of the consequences. It is in such vacant and unguarded hours, that the evil spirit of sensual indulgence attracts and secures its victims. Now those pursuits, which furnish an excitement to the mind, will arm it against such fascination, by keeping it in that action, which is as essential to virtue as it was to eloquence in the opinion of the great master of the art. Moral reforms are apt to resemble those of political parties, which remove one set of evils by substituting another; but whoever supplies subjects of engaging intellectual interest to the minds of men, goes to the root of the evil, while others are hewing at the branches, which spring again as fast as they are cut away.—*North American Review for October.*

THE CULTIVATOR—FEB. 1836.

TO IMPROVE THE SOIL AND THE MIND.

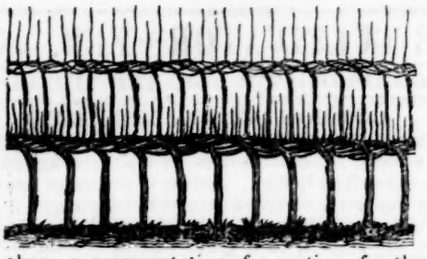
COMMON SCHOOL LIBRARIES.

The utility of common school libraries, in promoting the best interests of society, is manifest to every man who knows the advantages of acquired knowledge. But as a portion of the community are hardly supposed to appreciate this advantage, it is doubtful whether the law which provides for the establishment of these libraries, will not remain, to a great extent, a dead letter. Those who cannot read, or do not read, must be incompetent judges of the pleasures and advantages which books afford. Where libraries have been established, they promise the happiest effect, in inducing a taste for reading, not only among the children of the schools, but among their parents, and consequently are converting to usefulness, much time which was wont to be spent in indolence, if not in vice. If then these libraries are calculated to benefit the children which have access to them, and to increase the measure of public knowledge, virtue and happiness, why not make their provision mandatory? There are a great many people in the community, who would not, if the matter was left to their option, expend their money in repairing the public roads, or in maintaining common schools at all; yet the law compels them to do it, because the public good requires it. And would not the public good be subserved, also, by the intellectual and moral culture of the rising generation, who are soon to be the masters of the land?

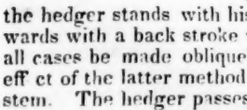
We have noticed, in our late readings, two instances, where men who became distinguished for literary acquirements, dated the commencement for reading, and the abquisition of knowlege, to the accidental perusal of Robinson Crusoe. Cobbett, who wrote more perhaps than any man now living, and who is *now*, on the score of talents, compared to Pitt, by some of the British reviewers, ascribed a like influence to his early perusal of the Tale of a Tub. The predominant passion of youth is curiosity. If we can blend useful knowledge with the gratification of this predominating passion, we bend the twig as the tree should grow—we plant seeds which, like the acorn, may spring up, and spread branches far and wide, to refresh and beautify the land. The nursery and the school are particularly adapted to this species of training. If the habit of reading is postponed to manhood, or is only enforced as a *task*, the mind either does not imbibe a relish for it, or rejects it with disgust. But if the habit is acquired in youth, as it generally will be where opportunity is offered of acquiring it voluntarily, it becomes a companion in manhood, and a solace in old age. At present, the opportunities for reading, to the young, are extremely limited in most parts of our state. There are few social libraries, and very few bookstores except in the cities and villages. The meagre supply of other than school books and bibles, which reaches the interior, principally passes through pedlers and chapmen, and are of doubtful character. It certainly becomes the guardians of the public weal, to take these matters under their special cognizance, and to see that the young mind is furnished with food adapted to its capacities, and calculated to promote its health and usefulness.

A series of well written numbers, ascribed to a late superintendent, has lately appeared in the public journals, showing the necessity of a reform in the management of common schools, and recommending that their supervision, together with the selection of school books, should be confided to the care of a competent superintendent, who should devote his whole time to the matter. The suggestion is worthy of legislative consideration. No branch of the administration is more important to the future welfare of the state, than that which has cognizance of the education of youth. It would present great advantages on the score of economy, if the superintendent should be also authorized to *buy* for the schools, as the works selected might be stereotyped, and bought, at wholesale, 20 to 50 per cent below retail prices, and charged to the districts at cost, and given in lieu of their equivalent value of school moneys. And there certainly would be no impropriety in providing by law, either that each distract *shall* provide school libraries, or that a part of the appropriations for schools shall consist of books, to be selected by a superintendent, to constitute one. We verily think that a portion of the public school moneys could not be better appropriated.

HEDGES.



We give above a representation of a section of a three thorned locust hedge, (*Gleditschia triacanthos*) which has been twice laid, showing the manner in which this operation is performed. The way we manage these hedges is, to manure well a strip of ground, where it is intended to plant a hedge, at least eight or ten feet wide, plough it deep, and crop it with potatoes. When the potatoes are off, we draw a line, either in the fall or spring, and dig a sufficient trench, on the line of the intended fence, a spade deep, with a perpendicular edge on the line side, and throw the earth on the opposite side. The plants are sized and then planted at ten inches apart upon the line. The ground is kept free from weeds two or three summers, by one or two hoeings in a season. When the plants are, upon an average, an inch to an inch and an half in diameter, we proceed to lay them as follows: The plants are first divested of their principal side shoots. They are then all, except a strong one at an interval of a foot, (and this applies to the second and third, rather than to the first laying,) bent and laid horizontal in the line of the fence, and at the required height, say twelve inches from the ground, and if necessary tied down with osier willows. Two men then proceed to wattle the remaining plants. Standing at the end of the hedge, one bends down the plant, and without cutting, to a horizontal position, the other opening the intervening tops, so that the laid top alternates to the right and left. The next plant is laid in the same way, binding the first, except that where the first passes to the right this passes to the left of the standing plants. In this way they proceed till the whole is laid. In two years the hedge will have attained a sufficient growth, if well taken care of, to admit of being laid a second time, and in two years more a third time, when it should stand four and an half or five feet high, and after which it should be only clipped like an ordinary hedge. The elm grows well with the locust in the hedge, and is peculiarly well adapted for laying and wattling, the tops and branches continue to grow in whatever direction they are laid. The seed of the elm may be collected in the last ten days of May, in this latitude, and if immediately sown, will produce plants from six to eighteen inches high the same season. The objection to the locust and elm is, that they are liable to become trees, instead of shrubs. The same objection lays against the beach, and yet this is extensively used upon the European continent as a material for live fences. It is thick planting, laying and clipping, that reduces forest trees to dwarfs. The locust should be laid in spring or autumn, when there are no leaves upon the plants. By preserving a horizontal direction in the laid wood, and elevating a little the tops, the whole, or the greater part, continues to grow, and the longer it grows the stronger it grows.



Hedges are clipped either with the shears or bill-hook. The latter is generally preferred. It is represented at fig. 3. It may weigh about six pounds; the cutting part is about twelve to fifteen inches, with a socket above in which to insert the handle. In using this implement, the hedger stands with his right hand to the hedge, and cuts upwards with a back stroke with his right hand. The stroke must in all cases be made obliquely upwards, and not downwards; for the effect of the latter method would be to shatter the lower part of the stem. The hedger passes on both sides, and gives to the hedge a uniform height, and symmetry of shape, with great despatch. The hedge-spade, (fig. 2,) has a blade five inches, and a handle three and an half feet long, and is employed in weeding and clearing the hedge.

We have expressed an opinion unfavorable to the buckthorn (*Rhamnus catharticus*) as a material for live fences, which we now cheerfully retract, having seen beautiful and efficient hedges composed of this plant, in the grounds of E. Henry Derby, Esq. of Salem, Mass. The plants are not laid, but first headed down and afterwards clipped. From its fine appearance we have been induced to procure plants to commence a hedge of it ourselves.

MANURES.

There is one fact in regard to the economy of manures, which we have before noticed, and to which would again call the attention of our readers, viz., that the portion of dung which escapes in the form of gas, while fermentation is going on, is the proper food of plants, *while they are developing their stems and leaves—and that it is prejudicial to plants when maturing their seeds*—seeds being the object of culture. Hence we reasoned, that unfermented dung should not be applied to crops which matured their seeds at midsummer, when the heat is intense, and when the dung is consequently in its most violent state of fermentation, but to the crops which mature their seeds or roots in autumn, after the fermentation has abated or subsided. To give an illustration familiar to every observing farmer: If unfermented manure is applied to wheat, rye, oats or barley, in any considerable quantity, there will be a great flush of straw, particularly where the dung may have been laid in piles, often covered with rust, and the grain will be small in quantity, and inferior in quality —while from a too luxuriant growth the straw is apt to lodge. The cause of this is, a too great abundance of gaseous food, "which forces it rather to leaf than to corn," and a prolonged growth of straw, at the season of maturing the seed, when the supply of food should be moderate. The same cause produces none of these evils upon autumn ripening crops. The gases arising from fermentation at midsummer, increase the volume and vigor of the stalk, and fit it to produce and sustain a heavier burthen; and the supply is diminished, and probably changed in its quality, by fermentation becoming exhausted, before the season of maturity. The corn and potato fields are therefore the best stercoraries for the deposite and prepartion of manures for the grain crop. These are the principles upon which we have based our recommendations and our practice, of applying manure in an unfermented state always to autumn-ripening and hoed crops.

We have used unfermented manure with good advantage for ruta baga, in some seasons, and to the prejudice of the crop in other seasons. If there is heat and moisture to induce a prompt and rapid fermentation of the manure, its application is highly beneficial; but if the fermentation is retarded, or prevented, for the want of these agents, the manure is sometimes prejudicial to the product. We have also used unfermented manure for garden crops which mature in autumn, as the onion, beet, parsnip, cabbage, &c. with good success.

Silk Culture.—Those who intend to commence this business the ensuing season, should now provide themselves with mulberry seed. An ounce of seed will produce two to three thousand plants. Directions for sowing it, and for managing the plants in nursery, will be found at page 50 of this volume. Those who have the trees, should provide themselves with the eggs of the worm. Both the mulberry seed and the eggs of the worm, may be had at the seed stores. We shall not forget our promise to give timely directions for the subsequent management.

ANSWERS TO QUERIES.

Marl.—A specimen sent to us from Orange, by Mr. Van Duzer, has been analyzed, agreeable to request; the result of which is, that it contains too much clay, and too little carbonate of lime, to make it a profitable application on any but very sandy soils—where the argillaceous will benefit as well as the calcareous matter which it contains.

Potash as a manure—Mr. R. R. Schenck inquires, what quantity of water must be applied to a given quantity of potash, as a top-dressing to grass lands? We have no experience, nor any data, that will enable us to answer the question; indeed, we doubt the economy of the application, while our farms abound with animal and vegetable matters which may be usefully employed as manure, and which are too often lost for want of care and attention. In using potash, however, we would recommend that trials be made of the solution of different degrees of strength, from that of a pound of alkali to two gallons to a pound to ten gallons of water.

Fall Ploughing.—A correspondent in Maryland asks for our opinion on the propriety of fall ploughing for corn, without indicating his soil or its condition. The question does not admit of a specific

answer. If the soil be stiff, or is covered with an old sod, fall ploughing is beneficial; ploughing exposes it to the mellowing influences of the winter, and a partial decomposition of the sod takes place in time to benefit the young corn. If the soil is sandy, and particularly if a clover ley, we would not advise ploughing till immediately preceding the time of planting, that all the green vegetable matter may be turned under for the crop. In either case we recommend that manure be spread before the ground is ploughed; and that if cross-ploughing is necessary in the spring, it be superficial, so as to leave the manure and vegetable matter of the sod still covered by the earth.

In regard to millet, this crop has its advantages and its disadvantages; but on the whole we deem it a profitable one. It exhausts the ground, and leaves it foul. It yields as much seed as wheat or rye; and upon this we have fattened hogs with advantage before the corn crop was gathered. It also affords a good burthen of forage, say ordinarily two tons to the acre, which cattle eat tolerably well, and which would be more serviceable if cut for them. This crop may be sown in May, June, or early in July; but instead of requiring three pecks of seed to the acre, as suggested by Mr. Seitz, four quarts, we think, suffices. It is sown broadcast, and will do well on any soil adapted to Indian corn. We are inclined to think it would do best sown in drills, with a drill-barrow, with intervals of two feet, when the crop might be tilled and cleaned with the cultivator and hoe.

Profitable Farming.—We give to-day another illustration of the productiveness of our pine lands, when under good management, in a communication from Samuel T. Vary. His improved lands have afforded him a nett profit of about thirteen dollars an acre, notwithstanding that his wheat and corn crops were seriously diminished by the grain and wire worms. If our farmers can all do as well as this in the old settled counties, we doubt whether they are likely to improve their condition by removing to Michigan or Illinois. We invite the reader's attention also to the interesting experiments of Mr. Miller and Messrs. Huntingtons.

Manual Labor Schools—Have frequently been the subjects of our commendation. They are calculated to give health and hardiness of constitution, blessings that cannot be too highly prized; and materially to lessen the expense of education. They afford, also, practical instructions in agriculture and horticulture. The Hudson River Seminary is of this description. It is under the care of the Rev. D. M. Smith. It has accommodations for 128 pupils, besides a large school room, and has attached to it an excellent farm of 200 acres. It is estimated that all the expenses of a pupil, including board, tuition, &c. will not exceed $75 per annum. This school is designed to fit young men for college, or for the business and duties of life.

Force of Prejudice.—The prejudice of our farmers against new implements, new modes of culture, and what they are pleased to call book farming, brings to mind an historical fact, strongly illustrative of the unreasonableness of vulgar prejudice. Walter Blith observes, that "it was not many years since the famous city of London petitioned the parliament of England against two nuisances, and these were Newcastle coals, in regard to their stench, &c. and hops, in regard they would spoyle the taste of drink, and endanger the people." These two nuisances have since become almost indispensable necessaries to the good people of London. And it will be found, that what the illiterate and bigoted farmer rejects as useless, will soon be found necessary to successful farming.

Importance of Education to the Farmer.—We particularly commend to the notice of readers of all classes, the excellent remarks of the Rev. H. Colman, copied into this number of the Cultivator, from the New-York Farmer, on the importance of education to the agriculturist. They are not only interesting to the farmer, but to the statesman and all others, who are interested in the future character and prosperity of our country.

NOTES ON FARMING.

FROM OUR MEMORANDUM BOOK.

Roots.—The roots of many plants will creep aside to avoid bad earth, or to approach good.—*Buffon.* Darwin says, roots put out no absorbent vessels where they are not stimulated by proper juices; and that they elongate only where they find proper nutriment.—*Phy.* 17. Where the soil is rich and mellow, the roots of most plants are longer than the stems. Mr. Thurell traced the fibres of the roots of wheat five feet deep, on the side of a marl pit; also the root of a turnip, drawn by hand, two feet and a half in length. The importance of extended roots and of tilling the ground, to the vigor and productiveness of a plant, may be evidenced in our tillage fields, where the outside rows, or outer border of grain, is generally inferior, because the roots cannot so freely extend into the adjoining grass grounds, and because the ground is often less perfectly tilled. Cobbet has given a forcible illustration in this matter: several rows of turnips were drilled one foot apart, along side of a ridge, which was ploughed and harrowed, when the turnips ought to have been hoed, but which were not hoed at all. The third row of turnips from the fresh ploughed ridge were double the size of the rows beyond it; those of the second row were double the size of those in the third: and those in the first row were much larger than those in the second. This difference was imputed wholly to the influence of the fresh ploughed adjoining ridge; and this influence extended to the third row, so as to double its product, and consequently the roots of the turnips growing in the third row must have extended three feet to reach the ploughed ground. These facts admonish the farmer to plough *well*, and to use the cultivator freely among his hoed crops.

Norfolk course.—Norfolk is a sandy district, and, until the introduction of the turnip culture, was one of the least productive counties in England. That culture, and the improvements consequent upon its introduction, have rendered it one of the most productive. The course of crops is, 1. Turnips always with manure; 2. Barley or oats and grass seeds; 3. Grass two years; 4. Wheat or rye. Mr. Young thinks but *one* ploughing should be given to a two year's lay, in the fall, for winter grain, and but one in the spring for (with us) corn or potatoes.—*See Young's Norfolk, p.* 62. The only variation which modern improvement has made in the Norfolk course, is to sow, in some cases, peas on the sod, and follow with wheat in autumn. The rotation is a judicious one on our sandy lands, where turnips are sufficiently cultivated; but as this culture is too limited in all cases, Indian corn may be advantageously substituted, or superadded, with manure, as the first crop in the course. Peas, as a fallow crop, to be followed by wheat, upon a two years lay, is preferable to a naked fallow.

Norfolk maxim.—Never take two crops of white corn (i. e. small grains, as wheat, rye, barley, oats, &c.) in succession.—*See as before p.* 364. Mr. Young thinks the pre-eminence of Norfolk husbandry is principally owing to a strict adherence of this maxim. This maxim should be amended so as to read, "never take two crops of *any kind* in succession," and the result will be found correspondingly beneficial.

Arable System.—Mr. Berckham asserted it as a fact, of which he had not the least doubt, that tillage, well managed, would support as much live stock, on the seeds, turnips and straw, as the same land would do all under grass; consequently the corn is all gain to the public, *I am certain it would*, adds Mr. Young. He spoke of pasture that would support two bullocks of 40 stone (560 lbs.) on the acre.—*Young's Norfolk, p.* 367. Reference was had to sandy lands, adapted to alternate husbandry; and we believe the remark will hold good here, where the lands are well managed, though the high price in manual labor may make some difference in the result.

Summer fallows were common thirty [now sixty] years ago in Norfolk; and seeds [grass] were then left three years. Now no such thing as summer fallows are known, and seeds are left but two years. The number of horses is lessened; ploughings are not so frequent; often but one for barley, and some trust to scarifying, and have succeeded well. Those and other improvements have increased the product one-fourth or one-third.—*Ib.* 367. It is a fault with some of our best farmers, who have adopted the alternating system, that they leave their grass too long, three, four, or five years, till the clovers, which are to impart fertility to the soil, have in a measure disappeared. The clover roots penetrate and break the soil, which is always loose and permeable while they are undergoing decomposition.

Marl is applied in Norfolk at the rate of from 8 to 100 loads per acre; if the less quantity, it is often repeated. Seventy loads per acre will last fifteen or sixteen years. This is said on the authority of Young.

Planting.—We have said that the forests of England have all been planted by the hand of man. To give an idea of the extent of these plantations, we state, that in twenty years, Mr. Coke planted 718 acres to forest trees of various kinds, with 2,123,000 plants, Mr. Bevan planted 96,000 trees.

Shrinkage of Grain.—Wheat, gathered ripe, lost in forty-nine days, nearly one tenth of its weight; barley, in forty days, lost one seventh of its weight. This was in September. In October wheat lost, in twenty-four days, 2 lbs. 1 oz. 15 dr. per bushel of 70 lbs. In January wheat lost, in thirty-one days, at the rate of 2 lbs. 15 dr. per bushel.—*George, Ess. vol. 2, p.* 117. Grain stacked till April, sustained a loss of nearly 35 per cent. *Farm. Mag.* XVIII. 26. Indian corn, gathered dry and shelled in October, had lost in May following, nearly seven per cent in measure.

Advantages of a light soil.—An open soil, if not too light in its own nature, will always produce plentiful crops. It readily receives the air, rains and dews, [and heat] into its bosom, and at the same time gives the roots of plants a free passage in quest of food. This is the true reason why land well tilled is so remarkably fruitful.—*George. Ess.* 1, *p.* 22.

SUMMER FALLOWS.

The writer of the article "Agriculture," in Brewster's Encyclopœdia, enumerates the following as the substance of the arguments urged against summer fallowing.

"1. Nature does not require any pause or rest, and the earth was evidently designed to yield a regular uninterrupted produce.

"2. As the productive quality of the earth never ceases, if corn is not sown, weeds will be produced; therefore it is our business to expel the unproductive plant, and to introduce others that are beneficial.

"3. That the idea of leaving land to rest is ridiculous; for, by keeping it clean, and by a judicious intermixture of crops, it may be managed like a garden, and sown from one generation to another.

"4. That fallows exhibit nothing but a conflict between the farmer and his weeds, in which the latter generally prevail; for at the best they are only half stifled, and never effectually killed."

Admitting most of these arguments to be correct, the writer insists on the necessity of summer fallows, in heavy or cold soils, and upon every variety incumbent on a close or retentive bottom. "No doubt," he adds, "a bare or naked fallow is not necessary upon light fine soils, because such may be worked in the months of May or June, and afterwards cultivated for turnips." Summer fallows, upon cold or stiff soils, it is contended, are indispensable as the only possible means of keeping them clean, i. e. of freeing them from weeds, especially from the roots of such as are perennial. As soils of the latter description are neither adapted to the growth of Indian corn or turnips, the best cleaning crops, and as potatoes are seldom cultivated on a scale sufficiently extensive to effect this object, we admit the conclusion is not unreasonable, viz: *that no soils adapted to the culture of Indian corn and turnips require to be summer fallowed; but that all stiff or cold soils, not adapted to the culture of these hoed crops, and that cannot be cleaned with a potato crop, are manifestly benefitted by an occasional summer fallowing.*

HARRIS'S CORN SHELLER,

Mann & Rice, of Troy, are the proprietors of this patent for the state of N. York. With it, one man will shell, as the proprietors allege, 50 or 60 bushels of corn per day. We have seen it work, and think it a valuable acquisition to the farmer who is not already provided with an implement of this sort. Its cheapness is a further recommendation; No. 1, being $4, and No. 2, $5. It is sold in Albany by Norman Francis, agent, State-street.

Sheep Husbandry has become a matter of much interests to our country. Wool already forms the great staple of many districts. The supply is not yet equal to the demand, and the demand is likely greatly to increase, as will undoubtedly the extent of our flocks. We have frequently intimated, that our best sheep lands have as yet been but partially occupied: that these consist of the hilly and stony districts upon the head waters of our great streams; that in these districts, illy adapted to tillage husbandry, wool may be grown much cheaper, and the flocks suffer much less from disease, than in districts which are flat and more fertile. With the view of promoting the interest of the wool grower, we shall devote a portion of several numbers of the Cultivator to this subject, and give such pictoral illustrations as may serve to render the matter interesting and useful. We commence the subject to-day; and shall hereafter speak of the value and uses of the pelt; of the nature and offices of the yolk; object and mode of salving; of the fibre and properties of wool; of wool stapling; of the influence of temperature; of pastures; of trueness, soundness and softness, as essential properties in the fleece; of elasticity, color, and grades of fineness; and of many other matters interesting to the growers and manufacturers of wool.

CORRESPONDENCE.

January 11, 1836.

Dear Sir—I read last evening Gov. Marcy's message, and this morning your last Cultivator. The former I consider excellent, with some exceptions; the latter decidedly the best number you have given to the public. It has less of the conjectural than any other which I have read. It has more physical science. By physical science, I mean the revelation of the laws of God. I think you are wrong in your remarks on irrigation. There is an immense loss in not saving the washings of roads. This is one chapter of irrigation. The price of hay at present would fully justify great outlays for irrigation, as practised in England. Your first article is excellent, as far as it goes; but if the writer had read Puvis' essay on lime, in the October and November numbers of Ruffin's Farmers' Register, [which will be published in the March and April numbers of the Cultivator] his reflections would have been nearer up to the time in which we live. We do not understand physical science in the U. States. It is far better understood and applied to the arts in France. Lime has fed wheat lands, and wheat has fed man for 5000 years, and it is time the debt was acknowledged. The farmers in the Mohawk valley could afford to pay you half a million of dollars for teaching them the use of lime.

I thank you for your little space to common schools. Why should not the rising generation be taught the meaning of scientific terms of daily application through life? It would be perfectly easy and practicable. We all neglect our duty to the young. How easy it would be to teach every boy in this state, that portion of chemistry and geology, which is applicable to agriculture.

The results of our school libraries are most cheering indeed. The books are not stolen, nor injured, and are regularly returned, and what is more important, the books are read. These boys, when they become men, will understand your last Cultivator, which is more than can now be said of some of their fathers—but which every farmer *ought* to be able to understand.

W.

Kinderhook, Dec. 18*th*, 1835.

Dear Sir—In compliance with your request, I send you the annexed statement of the products of my farm, and their sales, for the year 1835. This is simply the account of the marketable products. I have reserved enough of the several kinds for the consumption of my family the ensuing season, which are not included in this statement. My farm consists of 173 acres, of which 145 are under cultivation; the remainder is in wood. The soil is sand and fine gravel, sand and loam, and sand and clay. Portions are well adapted for grain, and again other portions for pasture and hay. I have not lived on the farm sufficiently long fully to understand and elicit its capacities, as for a number of years I have cultivated high and rocky land, where the farmer's principal profit was made from the products of the dairy. My oats were a full crop, so were my potatoes; but first the wire worm or something else, and next, the early frosts lessened my corn crop, I think, one-half; and one of my pieces of wheat was somewhat injured by the grain worm. The cultivation for my farm was done almost exclusively by myself and sons. The expenses of my family and farm, that is, money paid out, is $383.75, and this amount must be deducted from the gross sum stated as the income for the year. I will not pretend that I have raised more from the same quantity of land, perhaps not as much as many of my neighbors; if I did, their evidences of thrift and good farming would not bear me out in any such pretension.

Products and Sales of the Farm for 1835.

12 Calves,	$37 89
196 lbs Butter, at 20 cts.	39 20
1542 lbs Cheese, at 8 cts.	123 36
30 Lambs, at 15*s*,	56 25
850 bushels of Oats, at 52 cts.	442 00
375 bush. Potatoes, at 2*s*,	93 75
20 tons of Hay, at $15 per ton,	300 00
72 bushels of Onions, at 4*s*,	36 00
500 bush. Corn, at 6*s* 9*d*,	421 88
220 bush. Wheat, at 12*s*,	330 00
4 Cows Beef,	69 00
2 Oxen and 2 Steers,	130 00
7 Shoats,	17 00
1440 lbs Pork, at 7 cts.	100 80
22 Wethers, at $4 each,	88 00
	$2,285 13
Deduct money paid out,	383 75
	$1,901 38

I say nothing of the labor, as we have drawn our living from the farm.

I remain your friend, &c. SAMUEL T. VARY.

Dr. J. P. BEEKMAN.

Pittsford, Monroe Co. Jan. 9th, 1836.

Mr. BUEL—Dear Sir—Being unwilling to hide my light under a bushel, however humble it may be, when thousands of others are shining so bright around me, illuminating my path and rendering my labors more easy, more productive, and more pleasant, I have taken the liberty of forwarding for your disposal, an account of my past season's agricultural labors, so far as they are connected with the cultivation of the corn, the carrot and the ruta baga crops.

Under the influence of a strong disposition to innovate upon old theories and practices, and to mark out a new and untrodden path, where there appears to be room for improvement; with no reverence for usages whose merits are founded upon mere antiquity, I have commenced the agricultural life, prepared to think and to act for myself. With such a disposition, and knowing, as every man of reflection must know, that there is a great degree of ignorance on agricultural science in our country, you may well imagine that I see many things among our hard working and well deserving farmers, that most emphatically require a thorough and radical change—that there is a vast amount of labor, of hard, back-aching labor, which from improper application, produces not its suitable reward—and that there are many acres of fine productive soil, which by improper management are not made to yield a return of simple interest upon their cost.

I will acquaint you with my experiment upon the cultivation of a field of corn, of three and one-third acres. The land was of the kind here denominated the oak timbered land; a strong, loam soil, with a clay bottom. It had been three years down, after wheat, without seeding, and had been previously worked pretty close. In May, I carted on about thirty loads of rotted manure upon two acres of the poorest part of the land, and the rest was without manure. I then ploughed it very carefully, being particular to turn the sward *all* under. I then dragged it twice with the harrow across the furrows, and then with a hand-marker having seven trails, I marked out for the rows, three feet six inches one way, by one foot nine inches the other. The ground by this time had, owing to the drought, become very dry. It was now the 19th of May; I intended to have planted by the 12th, by which I should have avoided the bad effects of the drought. I soaked my corn, and rolled it in plaster; it was of the twelve rowed kind; I put from five to eight kernels in a hill, and covered with moist earth. The corn came up unevenly, some not till three or four weeks after planting. On the 2d June, I put on thirty-five bushels per acre of leached ashes. On the 11th, ploughed out the corn with the cultivator, and hoed, throwing a little fresh earth around each hill, first thinning it out to four of the best spears in each hill. It came forward now very fast. On the 23d, went through the second time with the cultivator, but owing to a press of other business, did not hoe it. July 2d, used the cultivator the third time, and hoed the second, throwing a little fresh earth in each hill. This was all the labor bestowed in the tillage of the corn; it now presented a most healthy and thriving appearance, and almost completely shaded the ground. At this period my neighbors began to prophecy the result of my experiment, and with no very flattering terms. Without a single exception, they told me I would have but little corn, and that that little would be poor, as it grew too thick, and was too much shaded. With this array of prophetic judgment, from old and young, against me, I almost began to doubt the wisdom of my experiment, and to repent having wandered from the footsteps of my fathers. Some advised me to cut out every other row, but as I had begun the experiment, I thought it proper to carry it through. The corn grew rapidly, grew strong, and maintained its healthy colour. On the 3d of October, after an unusually cold and unfavorable season, with frost every month, and one particularly on the fourth of August which materially injured the corn crop, and one on the 16th September, which put a stop to its growth, I cut up my corn by the roots and stouted it off the field, and left it till the 10th of November, when I completed the husking, and stored into my grainery *three hundred and twenty-two* bushels of ears of good corn, besides sixty of soft or pig corn; being at the rate of about fifty bushels of corn per acre. Besides the corn, I had double the usual quantity of stalks, which in this season of scarcity, I have found very valuable.

I will now inform you of the carrot crop. Early in the spring I carted eight loads of long manure on to one-eighth of an acre of tolerable rich bottom land, deep and loose, and ploughed it under; and on the 12th of May put the seed in the ground by hand, in drills fourteen inches apart. The seed did not come up well, there being frequent vacancies of from one to ten feet in length. In the course of the season the carrots were hoed twice and wed three times by hand. On the 29th October I harvested the crop, which turned out *two hundred and ten* bushels of carrots, at the rate of 1680 bushels per acre. The whole cost of tillage and harvesting was $14, including interest on land at $50 per acre; the value of crop at two shillings per bushel, $52.50, from which deducting cost, leaves a balance of $38.50 nett gain from one-eighth of an acre. I have no doubt that had the seed come up uniformly over the field, I should have had 250 bushels, which would have been 2000 bushels per acre.

Adjoining the carrot field, and of the same kind of land, and prepared in the same way, I had one-tenth of an acre devoted to the culture of the ruta baga. The ground was made perfectly level, and on the 26th June the seed was sown in drills from eighteen to twenty inches apart, and came up well, as the weather was very favorable. On the first hoeing they were thinned to twelve inches apart. They were hoed but twice; and on the 12th November I harvested *one hundred and twenty-two* bushels; being at the rate of 1,220 bushels per acre. Value of crop at eighteen pence per bushel, $22.87; tillage and harvesting, $6.25, leaving a balance of $16.62 nett gain from one-tenth of an acre.

With regard to the carrots, they were not thinned, but left to grow as they came from the seed; but the looseness of the soil allowed them to spread, and they grew to a very great size; some measuring 17½ inches in circumference, by 30 inches in length, weighing 7½ lbs. The largest turnip measured 25 inches in circumference, and weighed 11lbs; very few weighing less than 5 and 6.

I would respectfully solicit the attention of your correspondent, Thos. Midford, to the account of Ruta Baga culture, as exhibiting the result of the level system, which he considers the least enlightened and the least productive. Respectfully yours,

EDWARD MILLER.

Canaan Centre, Dec. 18th, 1835.

SIR—I have been much interested with the perusal of what has been published in the Cultivator, as to the best breeds of sheep, and as my views are different from some of your correspondents, I will, with your permission, submit some of them to the consideration of those interested, through the medium of your paper. I refer to the interest taken to procure heavy fleeced merinos, and I believe the moving cause was the publication on Pauluar merinos, representing them beyond their fair value. Connected with that, is the fault of running too much to short staple Saxony; making the fleeces too light for our climate with the care ordinarily bestowed on flocks; or not making the care equal to their wants. The unprecedented loss of lambs last spring, had also a tendency to increase the excitement, and has been charged principally to the feeble constitutions of the Saxons; not making allowance for the severe drought the season before, which prevented the growth of after feed, and necessarily impoverished all flocks on farms fully stocked; nor for a winter unusually cold and long; nor for a stormy backward spring; nor for the scarcity of hay; all of which tended to facilitate the loss of lambs, and discourage many who had just commenced with improved Saxony bucks. But I said that heavy merinos had been represented to be better than they really are, which I believe to be the case, in the estimate value of their wool, though I have known it sold for sixty cents per pound; still that does not alter the intrinsic value of the article. The sale of different lots of wool to different purchasers, is no criterion whereby to judge of the value of such lots; as some purchasers may not be judges, or may pay higher for wool of the same quality.

As far as I have been acquainted with the sales of Pauluar merino wool, they have been made to speculators, as manufacturers acquainted with the article will not buy it except at reduced prices; and for the simple reason that it wastes very much in cleansing, and to that fact I can attest from experience, having had bucks after being washed, shear 7½ lbs. which in cleansing would be reduced to 4 lbs; but as the speculator sells in large quantities, he probably passes it off without loss; still some one is cheated, and the article remains the same, subject to waste and harshness from cleansing. If we were always to have a market as good as at present, and speculators as plenty, the controversy would be at an end; but if not, it is the interest of the wool grower to produce an article that will suit the manufacturer, and will stand competition. It is acknowledged by all that Pauluar merinos are much coarser than Saxons, and I believe the difference in fineness to be twenty-five per cent, which is the difference in the estimated prices heretofore made in the Cultivator; and the difference in weight in favor of merinos is made to over balance the Saxony in value. It is likewise acknowledged that merinos have a far greater proportion of yolk; the question then arises, what does that difference in weight consist of? a considerable part of it must be yolk, and of course is lost in cleansing; leaving in my opinion not more than 3¼ lbs. to a 4 lb. merino fleece. This will materially alter the estimate heretofore made. The above is, I believe, allowing less difference than any well informed manufacturer would make. The fact that Pauluar merinos have long since been discarded, and are bred in their native country only on plains, where better breeds will not flourish, and which is probably the cause of their wool being so greasy, should be a sufficient reason to induce wool growers to pause, before they adopt them as the most profitable, as it is undeniable, that after speculation subsides, intrinsic worth must be the standard of valuation.

As wool growing may well be termed a science, and as it is in its infancy in this country, and will require many years to bring it to any degree of perfection, I believe a middle course between the short staple Saxons and the heavy merinos may be pursued to manifest advantage; and my opinion is founded on practice. I would recommend crossing long staple Saxony bucks on Escurial merinos, thereby retaining in a

great measure the fineness of the Saxony, and improving the weight of fleece sufficiently to stand our winters with ordinary care. Such a course may be pursued, so as to obtain a flock two-thirds ewes and one-third lambs, that will yield an average of three pounds per head, and will bring within three or four cents in a pound as much as light fleeced Saxons. Such an article will in my opinion, when the value of the two are fairly tested, bring fifty cents a fleece more than an average of Pauluar merinos; besides being a fine good article, not subject to waste, or unsaleable when the market is well supplied.

If instead of advancing in the science, we retrograde, we shall never accomplish what all would desire, an improvement. If we reject the experience and practice of other countries, where wool growing has arrived to a great degree of perfection, and has been an important business for ages, we shall, when too late, I fear, deprecate our folly.

Yours respectfully, DANIEL S. CURTIS.

JUDGE BUEL—Sir—Seeing the result of some experiments of yours in the last Cultivator, we feel that we are not alone in failures. We are in the habit of adopting some new plan of agriculture almost every year: endeavoring always to improve our land and at the same time to increase our crops. In some instances I think we have been successful; in others the result of experiments remains to be proved. We wish at this time merely to state the exact product of a small piece of land of ours, lying near Connecticut river, containing one acre and five-eighths; the expense of raising, value of the crop, &c.

The land in question, we planted last year with Indian corn, sugar beet, and ruta baga; manured with about twenty loads of dung to the acre, and ploughed it under. The corn, (a little more than an acre) produced 160 bushels of ears. The sugar beet was a middling crop; and the ruta baga was almost an entire failure, owing probably to too early sowing and green manure.

Last spring we ploughed the ground as soon as it was dry enough; mixed one bushel of tea wheat with two bushels of oats for the whole piece, sowed it dry, I think, (though we commonly soak and roll it in lime,) harrowed well, then sowed 15 lbs. cloverseed and rolled with a heavy roller. The crop grew full five feet high, and before harvest, was almost entirely blown down with high winds, so that we were obliged to pick it up with sickles. Last week we threshed with a machine, and cleaned 98½ bushels of excellent grain. This will sell readily at 84 cents per bushel, which amounts to $82.74.

The expense of the crop, including threshing, was by accurate estimation $22.00, leaving for clear profit $60.74, besides the straw, which would probably sell for twelve or fifteen dollars.

We have never raised so heavy a crop of spring grain before, and attribute this in some measure to the roller, having never made use of one till this year. In October, when the clover was fully grown, we ploughed it under; which with the stubble, we think will be sufficient manure for a good crop of corn next year.

If the above statements are of any value, they are at your service,

T. P. HUNTINGTON,
Hadley, Mass, Dec. 28, 1835. T. G. HUNTINGTON.

Hyde Park, Jan. 16, 1836.

J. BUEL, Esq.—DEAR SIR—On the 1st of Jan. last, I communicated to you the result of my experiment on fattening hogs with apple pomace, &c. As I am confident your agricultural publication (the Cultivator) is well calculated to promote and improve the agriculturist, and being anxious that the cultivators of this productive soil may be found with the front ranks of improvement, I am willing to contribute my feeble help for its promotion, and forward you the result of my experience in fattening hogs this season with the same sort of material, apple pomace. On the 10th of Oct. I shut up to fatten, for E. Holbrook, Esq. Hyde Park, 20 swine, viz. 10 about fifteen months old, two China hogs, a boar and a sow, and eight shoats pigged in the beginning of June last. The whole, when shut up, were only in middling store order, in consequence of the scarcity of feed, the cows producing very little wash from the dairy, and the scanty crop of apples we experienced this season, and given them nothing during summer but a small orchard containing one and an half acres of land, (with the premature apples which fell) in which is a pond of water, that is very essential to hogs, to which, under the powerful influence of the sun, they will resort for their comforts. The above were divided into three lots and closely confined; we proceeded to fatten them by steaming 4 bushels of small potatoes, 12 bushels of apple pomace, 4 bushels of pumpkins, and 1 cwt. of buckwheat cornel, adding a little salt; the whole incorporated well together while hot from the steamer with a wooden pounder, and allowing fermentation to take place before feeding it away, (without the aid of the dairy wash which was given to the store pigs, &c.) supplying them with plenty of charcoal and pure water. On feeding the first steamer of the compound, I perceived more than ordinary moisture on their litter, which was occasioned by urine; my knowledge of animal nature convinced me that more than an ordinary flow would weaken the system and retard the progress of fattening. I attributed this cause to the steamed pumpkins acting as a diuretic, stimulating the kidneys and increasing the evacuation of urine. In the next steamer I substituted 4 bushels of ruta baga for the pumpkins, which had the desired effect. This experiment has convinced me that this mixture affords a greater mass of nutritive material prepared for the action of the stomach, and producing pork more rapidly than any combination of food I ever made use of. Using up all our pomace, and having a greater quantity of soft corn than usual, we commenced giving it to the hogs, but instead of improving their condition, they fell off, and we were under the necessity of procuring two loads of apple pomace from our neighbors, and commenced steaming and feeding again with the same good effect, until eight days before they were killed, during which latter period they were fed with sound corn, and slaughtered on the 1st of Dec. The expense of fattening, and the product of pork are as follows:—

	Dr.
32 bush. of small potatoes, at 2s,	$8 00
32 bush. ruta baga, including pumpkins, at 2s,	8 00
10 bush. soft corn, at 4s,	5 00
10 cwt. buckwheat, at $1 cwt.,	10 00
20 bush. sound corn, at 6s, 6d,	16 25
	$47 25
Cr.	
By 40 cwt, pork, at $7½ per cwt.	300 00
Deduct expense,	47 25
Balance,	$252 75

Yours with respect, THOS. MIDFORD.

Watervliet, Dec. 28th, 1835.

FRIEND BUEL—Noticing in the December No. of the Cultivator some queries and answers respecting the Yellow Locust, I have concluded to place the following facts at your disposal. About 28 years ago I first sowed yellow locust seeds for a gentlemen with whom I wrought in the town of Claverack, Columbia county. Seventeen years ago I sowed the same kind of seed on the farm on which I now live. On both occasions, the seed was sown about the time of planting corn, I think, but not to sow before the ground is warm. The most thrifty of those sown where I now live, were transplanted the next spring after sowing, and the rest in the course of the three following years. They were planted on the east and west sides of a field, close to the fence. Some were planted 2 feet apart, some 4 and some 7. They have suffered much from the borer; where planted closest, some were entirely destroyed by the worm. Three years since, those planted on the east, being the last planted, were cut down and used for posts. They made from 2 to 4 posts a piece. Those now standing will make from 3 to 8 posts a piece. My method of preparing the seed was the following:—Cover the seed with boiling hot ley, made by putting a few ashes into the water while heating. Let it remain in the ley one minute, then pour the seed and ley into a cullender and instantly throw on to it a pail full of cold water. Roll in plaster, and sow in drills. Not one seed in a hundred fails to germinate. In rich soils, some of them will rise 3 or 4 feet the first year. The three thorn locust is much slower in its growth, but wholly exempt from the depredations of the borer. I have had one tree of the three thorn growing in my garden 12 years. The ground has been ploughed every year, yet I have never seen a sprout.

Can you, or any of your correspondents, tell whether the timber be as valuable as the yellow locust? There is a very thrifty growth of sprouts where the yellow locusts were cut down for posts.

Yours respectfully, A WATERVLIET FARMER.

Note by the Conductor.—The three thorned locust is a *Gleditschia*, a genus of plants resembling the locust only in its foliage. It *does not* afford good timber, nor send up sprouts from its roots.

THE PLASTER REGION OF THE WEST.

It is a subject of much importance to ascertain the extent or probable productiveness of the quarries of Gypsum, or Plaster of Paris, which are found in various parts of western New-York. Those who may possess more geographical or geological information in relation to this mineral, would confer a favor and a benefit by communicating its localities, both in this state and elsewhere in the United States. Already in this section of the state its value as manure is highly appreciated, and its use becoming very general. Its consumption, however, is increasing so rapidly, that it becomes a question of some magnitude to the agricultural part of the community, what is the extent of the supply on which we may calculate for the future of this mineral. Some few remarks on this subject I now propose making, which I hope may elicit some more valuable communication from others. Quarries of plaster, or sulphate of lime, are to be found in various parts of the state west of Utica. In Madison and Onondaga counties, the stone is of a light grey colour. In these counties there are many plaster mills. My information from these counties is imperfect, but I should suppose that exclusive of what is sent to the east in the stone, and sent to Canada, (probably 10,000 tons,) the *consumption* in those counties for home purposes, cannot fall short of 7,000 tons per annum. In Cayuga county there are extensive quarries, from which, I am informed, not less than 15,000 tons per annum are dug, much of which is sent to Pennsyl-

vania. The plaster stone here is of a dark blue colour. It is usually sold on the banks of Cayuga lake in the stone, for $1.25 and $1.50 per ton. In Pennsylvania it is worth about $6 per ton, and the cost of getting it there and vending it, varies from $2.50 to $3.50 per ton. At the mills in Cayuga and Tompkins counties, it is sold, when ground, for $2 and $3 per ton. In Seneca county, on the Seneca river, there are extensive quarries of plaster which have only recently been opened. This plaster is of a light grey colour. It is sold at the mills on this river, for $3 per ton, when ground. The quarries on this river are said to be inexhaustable, as veins have been discovered of the plaster rock, extending half a mile from the river Much plaster is sent from this river near Seneca Falls, and likewise from Cayuga county, to the country above the Seneca lake, and there ground for use in the counties south and south-west. It is sold, when ground, in Tioga and Steuben counties, for $5 and $6 per ton. The consumption of the country around and above Seneca lake, cannot be less than six or eight thousand tons per annum. In the county of Ontario and town of Phelps, there are many quarries of gypsum. There is ground and sold in this town probably 6,000 tons annually; price $3 per ton. A very considerable income is afforded by these plaster beds to their owners. The proprietor of a single bed in Cayuga county, it is said, was offered and refused $80,000 for the bed on his farm.

I have not heard of gypsum being found at any great extent in this state, west of Ontario. Upon Grand river, in Upper Canada, it is said to abound. I have seen in Sandusky county Ohio, quarries of the species called alabaster, very beautiful, and white as Parian marble.

The consumption in this part of the state has been estimated for the few past years, to increase one-third annually. When the sleighing is good, farmers are known to come for it from the distance of seventy or eighty miles. As the intelligence of our farmers increases, and as their exhausted lands require aid, the demand for this valuable manure will augment. It is fortunate that in our great wheat growing region, there is at hand so cheap and so useful a mineral. It is not doubted now by well informed farmers, that by sowing plaster and clover seed annually, an annual crop of wheat shall be produced, without any dimunition of yield. The instances are too numerous to admit of the facts being controverted.

Seneca Falls, Dec. 28th, 1835. S J. B.

I transplanted last winter, in February, about fifty white pines; thirty of which are now flourishing. I am satisfied that the depth of winter is the best season for transplanting all evergreens; you may then take them up while the earth is frozen to their roots, and avoid bruising or injuring a single fibre. I have uniformly failed before in removing pines at all other seasons. S. J. B.

Conductor's Note.—To facilitate this mode of transplanting, which we commend, when the plants are at hand, go with a spade, *before the ground is frozen*, and cut the roots, and open the ground, at the required distance from the bole or stem, and when the ball of earth which encloses the plant is frozen, it may be taken up without trouble, and removed on a sled or wagon. Holes for their reception should also be dug before the ground is frozen.

SILK CULTURE.

Mr. Buel—We are happy to find you are not weary of well doing, and each succeeding number of your very interesting paper affords us something new, and brings full conviction of its usefulness by the statements of facts reduced to practice, without which "nothing can be perfect." Had we been favored with such a publication fifty years ago, and continued to the present time, wo no doubt, should have arrived at greater perfection in all the variety of mechanism and farming, together with all the minute affairs of employment, which are inseparably connected with the business of life and convenience. Less prejudices, fewer objections, giving up our traditions to, and the incredulity which still remains on the minds of many would have had existence! "But better late than never." The prospect is good, your paper is highly valued and will be liberally supported on the ground you proceed, and for one, I am of opinion you will add much to its interest in giving a few remarks on the cultivation of the mulberry and silk business. I had given up presenting myself to you on the subject, until *Agricola* came forward in your last number, which gave me a desire to assist him a little; or, should I not be able to help, I hope I may not hinder; and as it is possible many will commence rearing the worms the coming season, who may be unacquainted with the process, to those I would offer a few hints from my own experience, (small as it is;) I find its advantage over all theory. I have raised a few silk worms two seasons, which both hatched on the 22, 3d and 4th of May, and from a few small leaves of a number of plants set in the garden where they came forward soonest, I kept them alive till kindly supplied occasionally from two miles distance, and notwithstanding the severe frosts and drouth during spring and summer before last, they prospered well, and my silk was called beautiful, of which I send you a sample. I advise those who would avoid unnecessary labor in dressing off the tables, that attention is necessary for their health and quality of silk. 1st. To observe they are several days in all getting out, and if we take pains to place all of the 1st day's, 2d and 3d, &c. by themselves on different places, we shall know which will moult first, and all in course will be of equal age, in each parcel, over which I erect materials for their feeding after the fourth moulting. I bestowed much less labor on 1200 of this summer, than those of last of 600, in consequence of a machine invented by my boy, of some thin slips of boards fastened at each corner, and studded with short points or pegs, half an inch apart, crossing it with twine sufficiently tight to bear up the worms when grown, and I placed my fresh leaves on this thread riddle; they immediately come up from their wilted rubbish, and are nice in a short time; the offal then is soon cleared if none are set for skinning; if so, they must remain quiet, and will need no food till some time after they are out of their old dress. This simple machine saved me more than half in keeping them clean, and properly separated, for as soon as they are up on the new leaves, then carefully move the frame on a clean place. But after all my care I missed my figure to my sorrow, for I had procured a large quantity of leaves in a wet day, and I did not get them dry enough, which proved fatal to about 200 full grown worms; or, I cannot account for their loss so sudden, as they prospered well through all the change our climate is subject to. I must own I was surprised to see them prosper on so few leaves, and those from shrubbery; they differ greatly from those raised in my father's house in Connecticut, years ago. I remember they were white and short, and the cocoons were an orange colour; but these are black and brown, and some of a clay white; the last colour are those I raised the summer past, whose silk is not so clear and brilliant as that I made from the darkest colour summer before last, but I am not able to say which will be the best to raise; it remains for some better informed than myself to decide; but this I am fully convinced of, that the native black mulberry will not only support the worms, but will make handsome cocoons, as it was proved to a demonstration, by a family in this town, who had no other food. I had enough of the kind to last mine a week, on which they fed well, and many would desert the white Italian, so tender and fresh, for those large, thick, rough leaves of the native tree; but I do not test the silk until it is reeled. But all I have seen here of the kind of cocoons are of a light straw colour, and long and pointed at one or both ends, and the worms long and very ordinary. Having spun my subject thus, I ought to begin to apologize, and leave before I weary the Editor's patience; but if he will bear with me a little longer I will just mention to those who have silk to reel, spin and twist, to be sure to keep it wet during the different processes, as it helps to connect the fibres, and makes it more firm and smooth; and had we the simple French reel and *doblair* in our houses, we could reel it for a foreign market, or elsewhere, and then should we lay a foundation for future prosperity, which De Homegue speaks of in his essay, where he in his enthusiasm says, America might be what France now is, in point of wealth, that no devastation by sea or land can impoverish her, for he found our advantages over the old countries in the quantity as well as quality, having reeled on his superb French reel eight pounds of our cocoons, which made as much as twelve pounds of Italian or French. And now, Mr. Editor, permit me to give you my humble opinion, and you may give it to whom you please, that twenty years rolling round will present these United States a beautiful silk growing and manufacturing country. I risk no more in saying it than the prophet Evans, who foretold twenty years ago how our canals, our railroads, and swift flying steamers, should send our friends from north to south, from east to west. It is done. The world jeered him; they scoffed at a Fulton, at a Clinton—they may do the same now. No matter, it harms nothing; only let our enterprising men lend a hand; the work is half done; they will accomplish it, and I shall be happy to see others prosper. I expect nothing more than my labor for my pains. I wish not to reach beyond the limits of domestic concerns, and would be as willing to do without silk as any one, but since we will try to wear it, let the ladies be willing to raise it at home, that we may save a million of money, bread stuff, &c. which is sent to other climes for this one luxury. I hope to be informed, through your paper, how the *filosille*, or floss, is best manufactured. Small as my subject may appear, we must have nothing lost, for like the thousands of small streams that enter at last into the vast ocean, so may all the tributaries jointly meet at length in one complicated whole, and in the end prove a blessing to the poor, enhance the prosperity of all classes some way or other, throughout our country, as well as it has those of other climes. Yours, respectfully,

Greenfield, Nov. 22, 1835. G. B. W.

MINOR'S PATENT PUMP.

Mr. Buel—A very superior and cheap article of the above description, was sent me last fall, by the manufacturers, Messrs. H. Warren & Co. Jordan, Onondaga county, which I placed in a cistern in my yard, the operation of which I have been more pleased with than any other lift pump I have ever seen in use. It is very light and easily removed; the wearing or operating parts of them being of cast iron, and the composition with which the wooden pipe or tube is saturated, renders them durable, and obviates the evils so often charged on leaden pipes as being injurious to health.

The pump is intended to stand on the platform of the well or cistern, even with the surface of the ground; the part exposed is beautifully turned and painted. About two feet below the base, and above the working box, is a small metallic tube, which lets off the water and prevents it from freezing.

The one I have, stands on a curb eighteen inches above the platform

or top of the cistern, and is partially protected by straw, &c. and it has been frozen but once, and that was in the extreme cold weather in December last: since then it has remained free and works well.

The advantages of these pumps are, the very low price at which they are afforded, their durability, perfect operation, and protection against frost.

In a printed advertisement, furnished me with the pump, I find certificates and recommendations from thirty persons, who have them in operation. CALEB N. BEMENT.

MERINO SHEEP.

To the Editor of the Cultivator,

Sir—As a practical farmer, I offer you a few remarks on the subject of sheep, and though I may not have as many finished sentences and rounded periods as some of your correspondents, yet I hope my communication may not, on that account, be discarded. I am an old fashioned man, and inclined to old fashions, unless I am convinced that a new fashion is preferable.

In the recent discussion in the Cultivator, on the subject of fine wooled sheep, reference has been made to "old fashioned merino." The term appears not to have been well received by some, and has drawn forth the denunciation of a "barn yard phrase." For one, sir, I should be glad to see more of such farmer like expressions, in place of the wordy, theoretical remarks, with which some of our agricultural writings abound. Who ever thought of restricting the farmer in the use of words when talking of his cattle, sheep, or hogs?

An affectation of refinement in these things is, in my view, worse than ignorance.

For years I have been a sheep breeder, and the term "old fashion merinos," conveys to me a "distinctive perception" of an animal, and a particular family of animals, which existed in this country, soon after their general introduction from Spain. They are now rarely to be found. If another name is more desirable, let them be called the American merino, for in truth, they were first bred in this country by crossing the different flocks which were imported from Spain. I will instance a flock within my own knowledge. The person who commenced the flock was interested in the original importation, and therefore had an opportunity to select individuals in reference to a particular object. He did so, having in view a farmer's sheep that should give quantity with as fair quality as could be obtained; the little choice bore the marks and brands of five different Spanish flocks. They were crossed as was judged best; their lambs were by no means uniform in their appearance or value; but in a course of years, with the original object steadily in view, there came a race of sheep having the general appearance of the Paulaur, the fineness of the Escurial, and the close woolled qualities of the other flocks. The had also the large size of the Nigretti.

The sheep from this little beginning, were scattered far and near, with a high reputation. In 1826, the clip of that and the previous year, was sold at fifty cents per pound: with that exception it never sold as low. The same course of breeding has, I dare say, been followed by others with like success. It is, I presume, sheep of this description and character, that some one, with strict regard to truth, has called "old fashion merinos," and homely as the name is, I like it, for it reminds me of times when our sheep gave us four or four and a half pounds of wool, whereas they now only give us two or two and a half. My neighbor farmers on all sides, fearless of "retrograding," are striving to regain their merinos. One of them has a flock of merinos, which he keeps at a stack, without shelter during the whole winter. In the severe storm of the early part of this week, I saw them entirely exposed to the weather, yet not one appeared to heed it. They were in fine condition, and their close fleeces and well woolled heads and legs, assured me they could endure any extremity of weather. There was nothing in their appearance very "chimney corner" like, I can assure you.

It is a mistaken idea, that all breeds of sheep will thrive well in all countries. It is a fact, that delicate constitutioned sheep cannot live in England, and that even of the merino there is but one small flock. The importation of Saxony sheep has never been attempted, except for re-shipment to New South Wales, Of the many thousands of merinos imported into England on the invasion of Spain, scarce a trace can be found. The only pure merinos I could find in that country, a short time ago, were the property of a gentleman near London, kept with exceeding care and attention. He succeeded, it is true; but what did it prove? Why, that an exotic may be grown in a green house. Why then are paper statements made calculated to mislead the farmers, when experience has shown us, that to succeed in wool growing, we must breed a race of sheep suited to the climate.

In my county we have paid dearly for our speculating, experimental propensity, and the remains of our merino are now departing. A drover informs me, that he has during the past season, driven to a distant part of the country, and sold 4,000 sheep, and that he is unable to supply the demands at home for merinos.

It is an established principle, that private interest and speculation must give way to public good. Very respectfully, yours, A. B.

January 8, 1836.

Mr. Buel,—Sir—Permit me to make the following statement in answer to an article in the November number of the Cultivator, over the signature of R.

The mistake that I made in my figures, and of which I was not aware till I saw it in the publication, was wholly unintentional, and was so obvious that I thought every reader would have come to the conclusion, without laying the stress upon it that R. does. I am, however, perfectly willing to be corrected in this as well as in any other mistake.

As I took the price current of the Cultivator (May number) for my guide to make up the valuation, and for the different qualities, but which was far *below* the actual value of my own wool, I beg leave to state, that instead of 80 cents as quoted from the Cultivator, its actual value was 110 cents per pound last summer. The account, therefore, as compared to R's merinos, will stand thus:

My grown Saxons, 2¾ lb. per head, at 110 cents,.....	$3 02½
R's merinos, 4½ per head, at 60 cents.....	2 70
Leaving a balance in favor of my Saxons, of	32½

My actual clip of 2 lbs. 6½ oz. consisted of 85 fleeces from lambs, 65 from grown ewes suckling lambs, 45 yearling ewes suckling lambs (with the exception of 8 dry ewes,) and 5 from bucks from one to three years old. Every one practically acquainted with sheep, knows that ewes, especially young ewes suckling lambs, do not shear as much as dry sheep, and I think if I had as many wethers as I have ewes, that I should shear three pounds of wool on an average, per head. I rate therefore my grown sheep at 2¾ lb. of wool, well washed on the sheep's back, per head, and I think it will rather overrun than fall short of it.

As it regards the claims of earlier maturity of the merinos over the Saxons, I will not pretend to decide, but it is questionable in my mind whether the fact is so. With great respect, your ob't. serv't.

A. D. GROVE.

Hoosick, near Buskirk's Bridge P. O. Jan. 6, 1836.

POLICERATE SHEEP.

Mr. Buel,—Sir—Having in my possession a variety of sheep, which are not very common in this country, I have procured a likeness of the oldest buck, engraved by Mr. Hall, of this city, who I think has done himself great credit in the execution.

I obtained three bucks and nine ewes, in October last, from a farmer in Bethlehem, who procured the buck figured above, some five or six years since, from which he bred several bucks with four horns. The breed was originally procured as I have been informed, from some emigrants. I esteem them more for their odd and singular appearance, than for any intrinsic value they appear to possess.

The specimen represented above,* is remarkable only for his horns. The upright ones measure from the base twenty-two inches.

Buffon says, "One of the curious modifications produced by cultivation in the domesticated sheep consists in the augmentation of the number of its horns; two, three, or even four supplementary appendages of this description being occasionally procured in addition to the usual number. Under these circumstances, the additional usually occupy the upper and forepart of the head, and are of a more slender shape and take a more upright direction than the others, thus approaching in character to those of the goat's, while the true horns retain more or less of the spiral curve that distinguish those of the sheep. There exists a strong tendency to the hereditary propagation of its monstrosity, which is extremely frequent in the Asiatic races, but is also met with in a breed that is common in the north of Europe, and is said to have been originally derived from Iceland and Fetoe Island. In the latter case it is unconnected with any other anomoly; but in the flocks of the nomad hordes of Tartary it is usually combined with the enlargement of the tail and adjacent parts, by the disposition of fat frequently to an enormous extent."

In the islands of the Archipelago, and chiefly in the island of Candia, there is a breed of sheep of which Bellon has given the figure and description, under the name of *Strepscierus*. This sheep is of the make of our common sheep; it is, like that, clothed with wool, and only differs from it by the horns, which are larger and rise upwards, but are twisted into spirals. The distance between the horns of the ewe enlarges towards their tops; those of the ram are parallel. This animal which is commonly called the Wallachian sheep, is frequently in Austria and Hungary, where its name is Zacke.

The more cold districts of Iceland and Russia afford a *many horned breed* of sheep of mostly from four to seven or eight; having a coat of dark brown coloured hairy wool, weighing about four pounds, and covering an inferior quality of short soft fur.

In Cyprus many of the sheep are policerate, (having more than two horns.) They all spring from the frontal bones, the crest of which is elevated in a peculiar manner, in order to form their base. The central horns are usually straight, or somewhat devaricating—occasionally they are spiral; the lateral ones assume almost every possible variety of curve. A cut representing one of the most frequent appearance of the Cyprus

* The cut referred to has been destroyed or lost.

four horned sheep, is figured in the "*Library of Useful Knowledge—Farmers' Series.*"

CALEB N. BEMENT.

Albany, Jan. 1836.

MR. BUEL—Sir—Having had considerable experience in the culture of the ruta baga, and some in the mangel wurzel crops, I enclose to you some remarks that have not passed under my eye of late in any agricultural paper.

First, the seed should be raised from the smoothest and fairest roots, having the smallest and shortest necks, for in looking over the fields in various parts of the country, there will be found an essential difference in this respect when grown to maturity.

2d. It is common at the harvest to top them at the bottom of the neck. Such should not be the practice when designed for seed, save the main stem; neither should the seed be raised near any cabbage or kale, and vice versa, neither should the cabbage be allowed to seed by the side of the ruta baga, as both belong to one family, and both will degenerate: the ruta baga will have long large necks, and the root rough and sprangled. So also will the beet gender with the mangel wurzel, and both degenerate. The farmer, if wise will raise his own seed, or buy only of those on whom he can confide as selling the genuine seed.

The great dairy farmers in this section are waking up to their interest in this cultnre, and I have no doubt that the period is nigh, when the ruta baga will entirely supersede the growth of potatoes as a feed for sheep, cattle and horses; for one acre of rich land will produce on an average thrice as many tons of ruta baga, and will not cost in the planting, seed, tilling and harvesting more than one-third as much as does the potato acre, and is not as cold a feed in winter as the potato. On a four acre lot of ruta baga, the best acre last season yielded more than 20 tons, which will do much for 6 cows the winter on a short allowance of dry fodder, even if it were good straw. Our ruta baga plants of the first and second planting were entirely destroyed, immediately after they came out of the ground, by the little black insect resembling a flea. The third planting (about the middle of June) seemed to be hopeless for a while. Some have tried ashes and lime to good effect, as the plant comes out of the ground. Robin's drill barrow *has* on my farm the last season, been worth thrice its cost (15 dollars.) An acre of ruta baga, onions, mulberry seed, or corn, can be planted in 4 hours, and it would require more time and precision than any one would have patience to bestow, to do it as well on smooth land in any length of time. Mr. Bement, of Albany, is well acquainted with this labor saving machine, and will doubtless keep them for sale. Mr. Robins, of Copenhagen, Lewis county, is the patentee, and Daniel T. Buck, of Lowville of that county, the proprietor of this state. Green sward well turned over in the spring, and repeatedly harrowed lightly, is well adapted to growing ruta baga.

It seems to me, sir, that our common practical farmers might often call on the literary and scientific agriculturists for a solution of many problems connected with their pursuits to acceptance and great profit. And I do so in relation to the expediency of taking up the stone pavement in Broadway in New-York, and substituting wooden blocks of 1½ or 2 feet long, set end-ways. Will they be durable? Will the earth upon them shut the pores of the wood and become so impervious as to exclude the air, that they will not decay? If so—we too in the interior can substitute wooden blocks for stone; and we have yet some roads to make, over which stands a sufficient growth of timber, and that in wet mucky swampy land, where I should think wooden blocks would be more durable than in Broadway. I learn that this improvement (if it be such) is from the Russian practice of road making. An article on the philosophy and principles connected therewith, I am sure would be read with much interest by the subscribers for your valuable paper. With much respect, I am yours,

EPHRAIM PERKINS.

South Trenton, Oneida Co. Jan. 15, 1836.

I concur with Mr. Perkins in the above. Yours truly,

S. Trenton, Jan. 18, 1836. M. A. POWELL.

Montgomery Co. N. Y. Jan. 20, 1836.

IMPROVED PLAN FOR SETTING GATE AND FENCE POSTS.—WATER LIME AS A SUBSTITUE FOR PAINT, AND FOR TOPPING OUT CHIMNIES, AND PLASTERING WALLS OF HUOSES.

J. BUEL, Esq.—Sir—Being desirous of giving publicity to any facts that may be of use to the community, I am induced to communicate the result of some experiments made with the above mentioned objects in view.

Something greatly desirable in setting gate posts is, to have them fixed in the ground with the greatest solidity and firmness, and at the same time have the part beneath the surface preserved from decay. This end may be obtained in this manner: The hole for receiving the post is dug of a sufficient width to allow a space all round the post of from eight to twelve inches, and of a depth of from two to three feet. The post, which should be of hard and well seasoned wood, and of a size that will not render it liable to bending, is placed in the hole, and supported in an upright position and the hole filled up with cobble stones, the largest of which would pass through a ring of five inches diameter. A thin mortar, or grout, is then formed of two parts sand and one part water-lime, and being of a consistency to run freely, is poured on to the stones and entirely fills up the interstices between the stones, and in a few days firmly fixes the stones to each other and to the post, and the whole becomes as one solid piece of stone of the required shape to surround the post, without leaving space for the admission of water. This operation is the same with that in making cisterns of a certain kind recently invented and patented by a citizen of this state.

It will be observed that this manner of setting posts for farm gates dispenses with resorting to anchors and braces to give the required firmness. For setting fence posts this plan will perhaps be advisable only when of the best seasoned cedar, some of which, of the red species, are known to the undersigned to exist in a sound state at this time, that were taken from the stump in the year 1745.

As a cheap and valuable substitute for paint for outhouses the same article mentioned above has been used to a considerable extent in this vicinity, and with the most decided success. The ingredients are the most simple and easily procured, though one is of a nature that would not at first be considered as suitable for uses of this kind. To give greater adhesiveness to the cement, or water-lime, when it is to dry in the open air, *milk* that has had the greater part of the cream taken from it has been used. This and the cement are used instead of oil and white lead, or other paint. When a different colour from the natural, (a dusky white) is desired, a small proportion of common paint is added to give the colour. One peck of cement, which costs one shilling, and five pounds Spanish brown, costing about four times that amount, will form a paint, and of a very good colour, for an ordinary sized barn. This is for one coat, and for two about twice the quantities will be necessary. It forms a durable paint and effectually preserves the boards from decay. Cement in the vicinity of Albany costs about two dollars per barrel. The nearest manufactory is that of Messrs. J. Van Eps & Co., Amsterdam, whose cement is of the lightest colour, and therefore best fitted for paint.

Chimnies when laid up wholly with quick-lime, are subject to having the top bricks become loose and fall off by the crumbling of the mortar. This difficulty is avoided by the use of equal parts of quick-lime and cement. Mortar of the same kind may be used to advantage in plastering walls, or for a second coat after the first of quicklime has been roughened, when it will make an excellent hard finish.

H. VAN EPS.

Cattle and Sheep Husbandry.

SHEEP.

Agriculturists have applied different names to the sheep according to its sex and age.

The male is called a *ram* or *tup*. While he is with the mother, he is denominated a *tup* or *ram-lamb*, a *heeder;* and in some parts of the west of England, a *pur-lamb*. From the time of his weaning, and until he is shorn, he has a variety of names: he is called a *hog*, a *hogget*, a *hoggaret*, a *lamb-hog*, a *tup-hog*, or a *teg;* and, if castrated, a *wether hog*. After shearing, when probably he is a year and a half old, he is called a *shearing*, a *shearling*, a *diamond* or *dinmont ram*, or *tup;* and a *shearing wether*, &c. when castrated. After the second shearing he is a *two-shear ram*, or *tup*, or *wether;* at the expiration of another year he is a *three-shear ram*, &c.; the name always taking its date from the time of shearing.

In many parts of the north of England and Scotland he is a *tup-lamb* after he is salved, and until he is shorn, and then a *tup-hog*, and after that, a *tup*, or if castrated, a *dinmont* or a *wedder*.

The female is a *ewe* or *gimmer lamb*, until weaned; and then a *gimmer hog*, or *ewe hog*, or *teg*, or *sheeder ewe*. After being shorn she is a *shearing ewe* or *gimmer*, sometimes a *theave*, or *double-toothed ewe*, or *teg;* and afterwards, a *two-shear*, or *three-shear*, or a *four* or *six-tooth ewe* or *theave*. In some of the northern districts, ewes that are barren, or that have weaned their lambs, are called *eild* or *yeld* ewes.

The age of sheep is not reckoned from the time that they are dropped, but from the first shearing, although the first year may thus include fifteen or sixteen months, and sometimes more.

When there is doubt about the age of a sheep, recourse is had to the teeth, for there is even more uncertainty about the horn in horned sheep, than there is in cattle; and ewes that have been early bred from, will always, according to the rings on the horn, appear a year older than others that, although of the same age, have been longer kept from the ram.

It has already been stated, that sheep have no teeth in the upper jaw, but the bars or ridges of the palate thicken as they approach the fore part of the mouth; there also the dense, fibrous, elastic matter of which they are constructed, becomes condensed, and forms a cushion or bed that covers the convex extremity of the upper jaw, and occupies the place of the upper incisor or cutting teeth, and partially discharges their function. The herbage is firmly held between the front teeth in the lower jaw and this pad, and thus partly bitten, and partly torn asunder. The nodding motion of the head of the sheep is a sufficient proof of this.

This animal is one of those especially destined to support man with his

flesh; and that he may be able to do this with the least possible expenditure of food, and to extract the whole of the nutriment which the herbage contains, a provision common to all ruminants (as will hereafter be more fully explained) is made in the construction of the stomachs, and other parts of the digestive apparatus. As the first process by which the food is prepared for digestion, it is macerated for a considerable time in the paunch. The frequent and almost necessary consequence of the long continuance of the food in this stomach, exposed to the united influence of heat and moisture, will be the commencement of fermentation and decomposition, and the extrication of a considerable quantity of injurious gas. This often takes place, and many sheep are destroyed by the distension of the paunch caused by this extrication of gas. The process of fermentation and decomposition is accompanied by the presence or development of an acescent principle. It has been stated that an elastic pad occupies the place of teeth in the upper jaw; and that it is by a half biting and half tearing action that the sheep gathers his food: the necessary consequence is, that some of the grass, of harder construction than the rest, does not give way, but is torn up by the roots; a portion of the mould adheres to the roots, and is swallowed, and, all our soils containing more or less absorbent or calcareous earth, the acid is neutralized, and, as it were, removed, as rapidly as it is formed; except in some extreme cases, attributable almost entirely to the neglect or thoughtlessness of the proprietor of the sheep.

The teeth of the sheep are the same in number as in the mouth of the ox. There are eight incisor or cutting teeth in the fore part of the lower jaw, and six molars in each jaw above and below, and on either side.—The incisors are more admirably formed for the purpose of grazing than in the ox. The sheep bites closer than the ox; he was destined to live where the other would starve: he was designed in many places to follow the other, and to gather sufficient nourishment where the ox would be unable to crop a single blade. Two purposes are answered by this: all the nutriment that the land produces is gathered from it, and the pasture is made to produce more herbage than by any other means it could be forced to do. The sheep by his close bite not only loosens the roots of the grass, and disposes them to spread, but by cutting off the short suckers and sproutings—a wise provision of nature—causes the plant to throw out fresh, and more numerous, and stronger ones, and thus improves and increases the value of the crop. Nothing will more expeditiously or effectually make a thick permanent pasture than its being occasionally and closely eaten down by sheep.

In order to enable the sheep to bite thus close, the upper lip is deeply divided, and free from hair about the centre of it.

The stalks of the common herbage of the field, bitten thus closely as they are by the sheep, are harder and more fibrous than the portions that are divided and cropped by cattle; and not only so, but some breeds of sheep are destined to live, in part at least, on harder food than falls to the lot of cattle, as the different kinds of heath, or substances almost as difficult to be broken off as the branches of the heath. The incisor teeth are evidently formed for browsing on these dense productions of the soil, which would otherwise be altogether useless and lost. The part of the tooth above the gum is not only, as in other animals, covered with enamel to enable it to bear and to preserve a sharpened edge, but the enamel on the upper part rises from the bone of the tooth nearly a quarter of an inch, and, presenting a convex surface outwards, and a concave one within, forms a little scoop or gouge capable of wonderful execution. He who will take the trouble to compare together the incisor teeth of cattle and of sheep—both ruminants—both by means of the half-cutting and half-tearing action, having the stomach, in which the process of maceration is going forward, abundantly supplied with the absorbent or alkaline earth—the one, however, destined to crop little more than the summit of the grass, and the other to go almost close to the roots, and occasionally to browse on harder food—will have a not uninteresting illustration of the manner in which every part of every animal is adapted to the situation in which he is placed, and the destiny he is to fulfil. The pad also is firmer and denser than in cattle, yet sufficiently elastic, so that it is in no danger of injury from the sharp chisels below, while the interposed substance is cut through with the greatest ease.

The mouth of the lamb newly dropped, is either without incisor teeth, or it has two. The teeth rapidly succeed to each other, and before the animal is a month old he has the whole of the eight. They continue to grow with his growth, until he is about fourteen or sixteen months old. The accompanying cut, fig. 1, will give a fair representation of the mouth of a sheep at this age. Then, with the same previous process of diminution which was described in cattle, or carried to a still greater degree, the two central teeth are shed, and attain their full growth when the sheep is two years old. Fig. 2, gives a delineation of the mouth at this age.

In examining a flock of sheep, however, there will often be very considerable difference in the teeth of the hogs, or the one-shears; in some measure to be accounted for by a difference in the time of lambing, and likewise by the general health and vigor of the animal. There will also be a material difference in different flocks, attributable to the good or bad keep which they have had.

Fig. 1. Fig. 3. Fig. 6.

Fig. 2. Fig. 4. Fig. 5.

Those fed on good land, or otherwise well kept, will take the start of others that have been half-starved, and renew their teeth some months sooner than these. There are, however, exceptions to this; Mr. Price* says that a Romney Marsh teg was exhibited at the show fair at Ashford, weighing 15 stones,† and the largest ever shown there of that breed, and that had not one of his permanent broad teeth.

There are also irregularities in the times of renewing the teeth, not to be accounted for by either of these circumstances; in fact, not to be accounted for by any known circumstance relating to the breed or the keep of the sheep. The same author remarks, that he has known tups have four broad and permanent teeth, when, according to their age, they ought to have had but two.‡ Mr. Culley, in his excellent work on "Live Stock," says—"A friend of mine and an eminent breeder, Mr. Charge, of Cleasby a few years ago showed a shearing tup at Richmond, in Yorkshire, for the premium given by the Agricultural Society there, which had six broad teeth; in consequence of which the judges rejected his tup, although confessedly the best sheep, because they believed him to be more than a shearing: however, Mr. Charge afterwards proved to their satisfaction that his tup was no more than a yearling."§ Mr. Price, on the other hand, states that he "once saw a yearling wether, which became quite fat with only one tooth, that had worked a cavity in the upper jaw, the corresponding central tooth having been accidentally lost."

The want of improvement in sheep which is occasionally observed, and which cannot be accounted for by any deficiency or change of food, may sometimes be justly attributed to the tenderness of the mouth when the permanent teeth are protruding through the gums.

Between two and three years old the two next incisors are shed; and when the sheep is actually three years old the four central teeth are fully grown (see fig. 3): at four years old he has six teeth fully grown (see fig. 4): and at five years old all the teeth are perfectly developed (see fig. 6.) This is one year before the horse or the ox can be said to be full mouthed. The sheep is a much shorter lived animal than the horse, and does not often attain the usual age of the ox.

The careless examiner may sometimes be deceived with regard to the four-year-old mouth. He will see the teeth perfectly developed—no diminutive ones at the sides, and the mouth apparently full; and then, without giving himself the trouble of counting the teeth, he will conclude that the sheep is five years old. A process of displacement, as well as of diminution, has taken place here—the remaining outside milk teeth are not only shrunk to less than a fourth part of their original size, but the four-year-old teeth have grown before them and perfectly conceal them, unless the mouth is completely opened. Fig. 5 represents this deceptive appearance.

After the permanent teeth have all appeared and are fully grown, there is no criterion as to the age of the sheep. In most cases the teeth remain sound for one or two years, and then, at uncertain intervals, either on account of the hard work in which they have been employed, or from the natural effect of age, they begin to loosen and fall out; or, by reason of their natural slenderness, they are broken off. When favorite ewes that have been kept for breeding begin, at six or seven years old, to lose condition, their mouths should be carefully examined. If any of the teeth are loose they should be extracted, and a chance given to the animal to show how far, by browsing early and late, she may be able to make up for the diminished number of her incisors. It will not unfrequently happen that ewes with broken teeth, and some with all the incisors gone, will keep pace in condition with the best in the flock; but they must be well taken care of in the winter, and indeed, nursed to an extent that would scarcely answer the farmer's purpose to adopt as a general rule, in order to prevent them from declining to such a degree as would make it very difficult afterwards to fatten them for the butcher. It may certainly be taken as a general rule that when sheep become broken mouthed they begin to decline.

---

*Price on Sheep Grazing, &c. p. 84.

†The weights will all be calculated according to the new regulation of 14 lbs. to the stone.

‡Price on Sheep Grazing, &c. p. 83. §Ib. 214.

It will probably appear, when the subjects of breeding and grazing are discussed, that it will be the most profitable course to fatten the ewes when they are five, or at most, six years old, and supply their places with the most likely shearing-ewes. When a sheep gets much older than this, it begins to decline in its wool, and certainly loses much of its propensity to fatten; while, in the usual system of sheep husbandry, the principal profit consists in early and quick fattening.

The natural age of sheep it is difficult to assign. They will usually live, and breed, and thrive tolerably well, until they are ten years old; but there are instances of their living and thriving to a much more protracted age. Lamerville speaks of a Spanish ram, thirteen years old, that died sound, and got lambs in his thirteenth year.* Mr. Moore of Winthorpe, had on his pastures in 1824 a ewe that yearned a pair of lambs when she was a shearling; had two pairs yearly for fifteen years, and in the last two years produced single lambs.† Mr. Culley has "heard of particular sheep living to nearly twenty years old—those which the mountain shepherds call *guide-sheep*, viz: old wethers kept on purpose to guide and direct the bleating flocks upon those unfrequented wilds."‡

The molar teeth or grinders of the sheep are well adapted for lacerating, and reducing almost to a pulp, the grassy or more hardened fibres which compose a great proportion of the food of the animal. They are not only surrounded by enamel, but columns of it sink deep into their substance and rise above the upper surface of them. The faces of these teeth are cut into a number of deep grooves running across them, from without, inwards, and the projecting parts of the teeth of the one jaw are received into the depressed grooves of those of the other.

The faces of the molars being also slanting, in a direction from without, inwards in the lower jaw, and from within, outwards in the upper one, and the projecting edges of the enamel being exceedingly sharp, it is almost impossible that, in the lateral grinding motion of the lower jaw in the act of rumination, and the slow and careful manner in which it is performed, many of the fibres can escape, or if they do, there is an after provision for reducing them, which will, in the proper place, be described.—*Library of Useful Knowledge, Farmers' Series.*

Miscellaneous.

WILL THE STATE PATRONIZE AGRICULTURE?

Is a question often asked, but somewhat difficult to be answered. While capitalists and speculators can in a few hours, or days, make their hundreds and thousands of dollars, by the mere transfer of property, or on a rise of stocks, *they* will not care for the interests of agriculture, though it be the legitimate source of our wealth. While party politicians are looking to office for fame and fortune, *they* are not willing that agriculturists should share in the bounty of the state, though they be the great tax paying community. Yet we trust there are many, very many, who fall under neither of these appellations so far, as to render them regardless of the true interests of the state. The agricultural products of the state are believed to amount to fifty millions of dollars annually. Ten per cent, or five millions of this annual product, has been produced by improvements growing out of the legislative appropriations for agriculture in 1817. Our lands are susceptible, it is well known, of vast improvement in their product, and should the appropriation be made, which is contemplated in the following petition, we have not the least doubt but it would be a certain means, in five years, of adding ten per cent, or five millions of dollars, to the annual products of our agriculture; and that the revenues to the state, from the increase, would far more than remunerate the treasury for the expenditure.

The petition inserted below was drawn in 1832, by JESSE HAWLEY, Esq.—We republish it at this time, because we believe the plan it suggests in the main a good one, and with the view of bringing the subject before the public in time to form a topic for deliberation in the agricultural convention which is to meet on the 2d Monday in February.

PETITION TO THE LEGISLATURE.

To the Honorable the Legislature of the State of New-York, in Senate and Assembly convened:

We the subscribers, being mostly Farmers, residing in the County of HUMBLY REPRESENT:

That we should be highly gratified to see a STATE AGRICULTURAL INSTITUTION, forming an appendage of the magnificent system of Internal Improvement by which the State of New-York has signalized herself among her sister states in the American Confederacy;—to be constituted by a main State Society, with County Societies, as branches to the same; to be endowed with an annual appropriation of twenty-five thousand dollars from the State Treasury;—to be distributed among the several County Societies on the ratio of one hundred and fifty dollars to each Member of the Assembly;—to be expended in premiums for practical and experimental improvements in Agriculture, Horticulture and Manufactures; and the residue (being nearly six thousand dollars) appropriated for the funds of the State Society, to be expended in procuring choice, select, rare and useful Animals, Vegetables, Seeds, Implements, and Essays on Agriculture, for public distribution.

That the citizens of each County in the State be authorized and required to form a County Agricultural and Horticultural Society, organized with officers and committees, similar to the former Institution; that they draw their respective quotas of the public moneys, by the draft of their Presidents, certified and sealed by the County Clerk, on the Treasurer of the State Society;—that they add thereto, as far as may be, by private subscriptions and donations from patriotic citizens; but in order to obviate the senseless objections made to the former Societies, no competitor for premiums shall be required to pay initiation fees;—that the officers thereof shall distribute these moneys for premiums (after paying the necessary contingent expenses) on the best articles of Agriculture and Horticultural products; farm stock; experiments in farming and gardening; routine of crops; premium farms; and all the varieties of domestic household and shop manufactures;—that the Treasurer of the County Societies annually render an account of these applications of their moneys to the Treasurer of the State Society, and he, his accounts to the Legislature, or the Comptroller;—that the surplus funds of any one year, be carried to extend the list of premiums for the succeeding year;—that any county, failing to form and organize a Society, shall forfeit its quota of the state bounty, and the amount thereof shall be carried, either to the disposable funds of the State Society;—or, to the next year's fund for distribution to the County Societies.

That the State Societies be composed of Delegates from the County Societies, either, by the President, ex-officio;—or by a proxy, to be elected, either at the annual meeting, or by the Board of Managers; and also of the Members of both Houses of the State Legislature, as the Members thereof;—that they annually convene at the Capitol in the City of Albany, on the first Tuesday of February, for the choice of their officers and the transaction of business;—and that any citizen of the State be eligible to its offices.

That the President, Corresponding Secretary, Recording Secretary, and the Treasurer of the State Society be allowed a moderate salary of $200 or $250 per annum, for their services; and that the like officers of the County Societies, together with the Managing Committee, and the Reviewing Committee for premium farms, be allowed from one to two dollars per day, for actual services rendered in making preparations for, and in superintending the public exhibitions, and other business concerns of the Society;—in order to reward labor and talent, ensure the due and diligent performance of the duties of their respective offices, and to give life and spirit to the Institution.

That the funds may not be left to the doubtful contingencies of individual subscriptions;—or town votes;—or supervisor's supplies;—but, made a certain, adequate and permanent appropriation for a period of twenty years, that a thorough and efficient experiment be made on the utility of Agricultural Societies, instead of the former incompetent and penurious trial of two years, only.

We present you with this outline as being our views of the best manner of organizing and sustaining such an Institution: and we confidently ask it of you:

Because, Agriculture, being the chief source of human sustenance, deserves equal encouragement from the public authorities with any other vocation of man in society;—but has hitherto been the most neglected:—

Because, from past experience we are convinced that the award of premiums, and the competition for them, is the best mode yet devised, both to stimulate and reward the exertions and enterprise of individuals in making practical experiments, to be collated into a body of science for general instruction:—

Because, from the like experience we find that no certain reliance can be reposed on voluntary subscriptions to obtain the funds for premiums:—

Because, the limited means and daily wants of our practical Farmers deny them the time and capital to make gratuitous experiments; and when so made by the few spirited and enterprising individuals, the result remains obscure, without general circulation for the public benefit:—

Because, the Farmers being the principal Tax-Payers of the State, deserve a portion of the public bounties for the encouragement and improvement of their vocation:—

Because, scientific and practical improvement in Agriculture are a common public benefit, as well as the education of our children; and like that, most assuredly deserves to be sustained with a systematic organization by statute law and state bounty:—

And because, were it encouraged and sustained by public bounties, we believe it could be made greatly to increase subsistence; multiply population; and enhance the value of our lands.

We humbly conceive that such an Agricultural Institution belongs to the grandeur of New-York, to adorn her present Civil, Literary and Social Institutions, and her system of Internal Improvements:—that while the experiment would cost the State Treasury half a million, yet nearly all, and probably more than than that amount would be returned, by the increase of Canal Tolls, from increased production; the taxable value of the Real Property in the State augmented probably more than twenty millions; and the market value of the farming lands in New-York, made to command better prices than those in the adjoining states, as is already the fact, along the northern boundary line of Pennsylvania. And that the project is a great statesman's measure. As in duty bound, et cetera.

* Lamerville on Sheep, p. 102. † Farmer's Journal, May 3, 1824.
‡ Culley on Live Stock, p. 212.

THE HOP CULTURE.

The soil most favorable to the growth of hops, is a deep rich loam, pretty strongly inclining to clay, moist, but not wet; and the subsoil should be porous, so as not to retain the water which settles from the surface. The largest crops are grown in Britain upon a kind of slaty ground, where the understratum is rock. The most desirable situation for a hop plantation, is ground sloping gently towards the south and southwest, and screened by means of high grounds or forest trees, from the north and north-west. At the same time it should not be confined so as to prevent the free circulation of air, which is indispensably necessary to the well being of the hops, as not only conducing to the health and vigor of the plants, but as tending to prevent blight and mildew. The neighborhood of fenny or swampy grounds is unfavorable to the hop crop.

In preparing the soil previous to planting, considerable attention is necessary by fallowing, or otherwise, to destroy the weeds, and to reduce the soil to as pulverized a state as possible. The ploughing should be deep, the ridges made level, and the dung applied with a liberal hand.

The mode of planting is in rows, with intervals generally of six or eight feet. A good way is, after the ground is prepared, to draw furrows both ways across the field, at the intended distance of the hills, and to plant at the points of intersection. At eight feet apart, there will be 680 hills on an acre; at six feet 1,210. Planted in this way, the ground may be kept clean and worked by the harrow and cultivator.

The time of planting is generally in the spring, when the old plants are dressed and pruned, and from which cuttings and sets may be obtained.—Plantations may also be made in Oct. and Nov. Sometimes roots and sets are planted one year in the garden, to give them strength and vigor, and then removed to the plantation.

The plants of cuttings should each have two joints or eyes; from the one which is placed in the ground springs the root; and from the other the stalk, provincially the bind. They should be made from the most healthy and strong binds, being cut generally to the length of five or six inches. When the ground has been marked out, take out a spit or spade depth of earth where the furrows cross, loosen the earth below, and throw in half a bushel of fermented dung, or compost, or surface mould, into each hole; then replace so much of the earth taken out as to form a small hillock. Upon this put in, with a dibble, five or six sets, at intervals of six inches, inclining to the centre, where one of the plants may be placed.

An interval crop is generally taken the first summer, of beans, potatoes, or even corn, though the smaller the system of roots of the internal crop the better. It should be a hoed crop, in order that the ground be kept clean. The hops do not produce any thing the first year. The common cultivator may be used in cleaning the interval crop, the hop hills may be slightly earthed, and weeds destroyed.

The process of tilling, hoeing, and earthing up, is an annual operation, performed in the spring, and manure is applied once in three years. It is either laid on the hills of the hops, or in the rows, and buried with a shallow furrow. In June the operation of twisting is performed on such plants, planted in the spring, as are not expected to produce any crop that season; and consists in twisting the young vines into a bunch or knot, so as to induce a more vigorous growth of roots.

The yearly dressing of established hop plantations consists of what is provincially called picking. This operation is generally commenced as early as the season and soil will permit, in April, when the hills are spread out, in order to give opportunity to prune and dress the stalks.—The earth being then cleared away from the principal roots by an iron instrument called a picker, resembling a dung fork, but with more and lighter teeth, the remains of the former year's vines are cut off, together with the shoots which were not allowed to attach themselves to the poles the former season, and also any young suckers that may have sprung up about the edges of the hills; so that nothing is allowed to remain that is likely to injure the principal roots, or impede their shooting out strong vigorous vines at the proper season. After the roots are properly cleaned and pruned, the hills are again formed, with the addition of the manure, when applied.

Polling the hop is performed in April, when the shoots have risen two or three inches. The poles may be 12 to 15 feet in length, and sufficiently stout to resist the strength of the wind, when covered with the hop vines. They are fixed in the ground by making deep holes with an iron crow, and ramming the earth well round them after they are inserted in the holes. Two, three or four poles are placed at each hill, in such position as to leave the south side open to the meridian sun.

Tying the vines to the poles, is an important operation. It is performed as soon as the vines have grown sufficiently to require it, and repeated till they have attained a secure height. Two or three strong vines are selected for each pole, wound round, and tied loosely with withered rushes bass matting or other ligature. The remaining vines are then cut away.

Picking the crop is thus performed. Frames of wood are raised in the most convenient part of the plantation. These frames consist of four boards nailed to four upright posts, the whole frame being about 8 feet long, 3 feet wide and 3 feet high. Six, seven, or eight pickers, generally women or boys, are placed at the frame, three or four being at each side. The plants being cut through at the root, the poles are lifted up and laid upon the frame with the hops upon them. The pickers then can freely pick off the hops, which they drop upon a large cloth which is hung upon the frame with tenter hooks. When this cloth is full, the hops are emptied into a large sack and carried to the drying house, where they are kiln dried and bagged for market. The hop crop should be gathered *when it is ripe*, and before the autumnal frosts. For the criteria of ripeness, or the period when they are best fitted to gather, and directions for drying, we refer to the brewers' circular, at p. 83 of this volume.

The process of packing, is thus managed. In the floor of the room is a round hole, equal to the size of the mouth of the bag. The mouth of the bag is then fixed firmly to a strong hoop, which is made to rest on the edge of the hole. The bag is then let through the hole, suspended by the hoop, and the packer goes into it. Another person puts the hops into the bag in small quantities at a time, and the picker tramples them firmly down. When the bag is full, it is drawn up and the end is sewed. The hops are now ready for market. In the mean time the poles in the plantation have been stripped of the stems attached to them, and set up in stacks to await the following year. A hop plantation lasts from 10 to 15 years, when it must be renewed, the old roots dug up, and fresh sets planted, on another plat of ground.

The produce of the hop is variable. It varies from two to 20 hundred weight the acre—1,200 is perhaps about the medium. We have no data as to the cost of labor; but assuming the above medium, and that the average price is 20 cts. per lb. the produce of an acre will be worth $240, expenses to be deducted.

From the New-York Farmer.

THE IMPORTANCE OF EDUCATION TO FARMERS.

BY HENRY COLMAN.

The station in the community occupied by the agricultural class, is commanding and important. In every country of any considerable extent, they constitute the most numerous part of the population; and that upon which all others ultimately depend. The products of agriculture are the first form of wealth; and without the labors of the husbandman, every other occupation must cease. Where agriculture has been extensively carried on, and estates large, there the planter or landholder has generally held a high political estimation; and exercised all the influence to which he could justly aspire. In England, the nobles and barons, in Europe, the feudal lords and princes, and in our own country, the southern planters, have maintained a high rank, and wielded a powerful control in the affairs of the country. These individuals, however, scarcely deserved to be classed with the agricultural population, since, with some few occasional but most honorable exceptions, they have seldom taken any immediate interest in agriculture, properly so called, or entered into its details farther than to receive its rents; and then, we should be happy if truth did not compel us to add, have looked with disdain and scorn upon the actual tillers of the soil, those whose severe toil furnished them the means of subsistence, luxury, and wealth.

In our own country, in those parts of it where free labor only is known, and where, especially in New-England, the land is greatly subdivided into innumerable and comparatively very small freeholds, and the owners are themselves the actual cultivators of the soil; there the farmers, though not a degraded class, have yet failed to have that place in the public estimation, and that influence in the public concerns, to which, as a class, the part they perform, and the contributions they render to the public weal, entitle them. The professional man, the merchant, the trader, the tavern-keeper, the manufacturer, and the mechanic, take precedence of the farmer; and feel at liberty, unless he has about him the artificial insignia of some office, to look down upon him. To this law of rank, if so it may be called, the farmer, in general, submits without remonstrance or complaint, and consents to see even the shiftless, idle, and dissolute, who live only to consume the fruits of the earth, and take no share of the public burthens, and contribute not a whit to the substantial welfare or real improvement of the community, preferred before him.

Now, do we wish to excite in the farmers a foolish ambition? Do we desire to make them eager after distinctions, which have no substantial importance? Would we have them deserting the plough, quitting the honorable though humble occupations of their own domicils, and enter the arena of political strife, and engage in the idle struggles for precedence, notoriety, and display, which every where excite and agitate the community? Far from this. We think this would be alike injurious to their interest and comfort. We think farmers are almost always losers by every engagement or occupation disconnected with their proper pursuit, which necessarily carries them away from home. We do not mean occasional absences, in which a farmer may go abroad, to see, as Bakewell expresses it, "what his neighbors are about;" for in this way, he may get much valuable information, which otherwise he could not acquire; but we mean engagements, occupations, and absences, which necessarily divert his attention from the proper business of his farm. We have never known a farmer set up for a politician, or a jockey, either on the turf or in the market, or a man of pleasure, without his farm suffering for it. But what we desire is, that the occupation and profession of agriculture

should be advanced to that degree of respectability, which should make it an object of desire instead of disdain, and give it that place in the public estimation, which its importance justly claims. We wish that manual labor should be considered honorable; and that the man who, by the sweat of his brow, develops the resources of our great nourishing mother, the earth, and, by toil and skill, extends these resources and doubles her products, for the subsistence and comfort of the animal creation, and thus multiplies indefinitely the capacity and means of happiness, should be regarded as among the truest benefactors of the community; as occupying one of the most honorable posts, and performing one of the most useful parts in the beneficient schemes of Divine Providence.

The next inquiry is, can this be done? We shall not undertake to say how fully or to what extent it may be accomplished; but we are happy in the belief that much has already been done, and still more may be effected, to render the profession of agriculture as respectable as, in a political view, it is useful, and, to a rational mind, engaging and delightful. What many of us feel to be matter of serious regret, and which results, in a considerable degree, from the false notions of which we have been speaking, is the fact that farmers' sons are in so small a proportion found willing to engage in the business of farming; but are crowding into the learned professions, already full to overflowing; pushing into every avenue of trade, with the impetuosity of a pent-up stream, and suddenly bursting the barriers of its enclosure; thirsting for political office or employment under any form, with an eagerness as impatient as that with which certain voracious expectants in the farm-yard gather round the trough at the call of the herdsman; forsaking the simple fare and the plain and humble occupations of the country, for the enervating, and too often pernicious luxuries and pleasures, and the exciting, harassing, and uncertain cares, may we not add, perilous games, of city and commercial life; exchanging the wholesome and free pursuits of agriculture, oftentimes at the certain risk of health and life, for some of the most unwholesome pursuits of the arts and manufactures, if so that in any way they can see a quicker return in cash for their labor; more often seeking to live by their wits than their hands; and, at the peril of peace, honor, and all good morals, plunging into the most extravagant and hazardous speculations.

Now, to be sure, the obvious and perhaps only cure for this evil would be to correct the moral sentiments of the community; to give to the young a truer standard of duty; more correct views of what is honorable; a juster sense of what they owe to society, and better notions of the true dignity and good of life. It would be well, if we could early make them feel that they were as much designed to labor as to live; that the industrious employment of their talents of every kind, is an obligation of the highest solemnity, and one which they cannot forego with impunity; that all labor which is useful, whatever may be the current estimation of it, is equally honorable; that a competency is far more favorable to comfort and virtue, than an excess; that exemption from care and labor is, in most cases, a curse rather than a blessing; that a sufficiency of the common comforts of life, with the means of meeting the ordinary claims of hospitality and beneficence, added to the gradual improvement of our condition as we advance in age, presents the situation of all others the most desirable and enviable in human life; that an inordinate avarice, with its ordinary concomitants of niggardliness, fraud, and inhumanity, is among the most debasing of all passions; that they who make undue haste to be rich are seldom innocent; that sudden acquisitions are always hazardous to virtue; that speculation is a game of hazard, in which men much oftener lose than win, and extraordinary gains are but too often made at the cost, if we may use the expression, of losses, for which no pecuniary success can ever furnish a compensation. These moral influences are likely to have but a very partial operation. Few are so fortunate in the situation in which they are early placed, so favored in their connexions, their parentage, their early advantages,—that these impressions become so deeply implanted in the seed-time of life, and so carefully watched over and strengthened by parental culture and example, as to control the decisions of youth, and fix their lasting impress upon the character. To most persons, indeed, these lessons come only as the fruit of their own mature experience, and so late in life that it is almost beyond our power to retrieve our early mistakes, and apply the dictates of wisdom to the regulation of our business and conduct.

But what these moral influences may fail to effect, we may hope will be ultimately accomplished by the power of education, operating in conjunction with them; we mean intellectual education—intellectual improvement. In this matter, we trust we shall be doing no injustice to the agricultural class, if we say they are very deficient; that they are very far below the point, in the scale of information which they ought to have reached, in this age of easy knowledge and unexampled progress. Taken as a body, are not the farmers, in respect to intellectual improvement, far behind the merchants and the mechanics? With professional men of course, we do not compare them. If farmers, then, would be respected as they ought, they must, by the improvement of their minds, establish their claims to this respect. They must not only cultivate their lands, but they must cultivate themselves. Putting moral character out of the question, for nothing is to be compared with this, what raises one man above another? Not animal strength; not political power; not mere cunning; not artificial arbitrary rank; but mind, knowledge, intellectual cultivation, true philosophy. This constitutes the only real nobility of human nature—the legitimate aristocracy of mankind, whose laurel honors are open to all who will deserve them, and with which no aristocracy of wealth, or power, or title, can ever come into competition.

We say, then, there is no class in the community so much interested in education as the farmers. They are the most numerous part of the population; they are in every respect the most important part of the population. We mean nothing invidious or disparaging to other pursuits or professions by these remarks, but *they* have more at stake in the country than any other class in the community. Professional men, merchants, and others, among the non-productive classes, may change their business pursuits, or residence, at pleasure; readily become naturalized to any situation in which they happen to be placed; carry their goods, talents, and capital with them; and soon take root wherever they chance to fall. No so with the farmer. His farm is immovable; he is a fixture to the soil; he cannot, if he would, separate himself from his country; and all his interests are involved in its welfare and condition. Floating capital, as it is termed, may play ten thousand pranks; expose itself at one time, and suddenly hide itself at another; now rise to the surface and basking in the sunshine, making the whole sea, as far as the eye can reach, appear like a bed of glittering diamonds; and then, at the first rising of the storm, when the threatening cloud is no bigger than a man's hand, at once sink to the bottom, and bury itself in its unsearchable concealments; at one time emerging from the waters long enough only to throw its dazzling rays into the eyes of the bewildered and enraptured beholder; and then, as it were, at the pleasure of the magician, who cries begone, it vanishes from his sight. It is far different with what is properly called real property—the farm, the capital of the farmer; that remains fixed and exposed, without the possibility of withdrawal, or concealment, or shelter, to all the changes of the political sky. All that he calls his own is fastened, by an inviolable chain, for weal or for woe, to the destines of his country. Are we wrong then in saying, the agricultural class are the most important part of our population? and can we, in respect to this class, possibly overrate the importance of education? To what class in the community is it so important that they should understand their rights; that they should have a just perception of the true interests of the country; and that they should be qualified for the intelligent discharge of their duties as citizens of the Republic, who must always have the deepest interest in its destinies and fortunes; and who, so long as our free constitutions are sustained and the right of universal suffrage is continued, must have its government and condition within their control? Nothing can effect this much for them but education. This only can secure to them that respectable standing in the political community, to which they have a just claim, and enable them to exert properly and successfully the important influence which belongs to them. While the great body of the yeomanry remain an ignorant, and comparatively degraded class, the inevitable consequence of ignorance, there is in truth no adequate security for public liberty.

Education, in the next place, is most important to the farmers as matter of interest—I mean matters of interest and profit in their own art. I know very well the idle and senseless sneers, which are thrown out continually against what is called book farming, but they are scarcely worth noticing. I am not unaware, likewise, of the great importance of practical knowledge and personal experience in an art so practical as agriculture. Yet I have no hesitation in saying, that there is no art, which, for its improvement and success, owes more to science than this. I admit that some of our most successful farmers, in a pecuniary point of view, as well as some of our most enterprising merchants, have been men of very imperfect advantages, and limited information. But though they have been men of few of the public and ordinary advantages of education, yet such men have never, unless in some very extraordinary and accidental case, been other than what are called self-taught men; men of great natural shrewdness and intelligence, who have anxiously availed themselves of all the advantages within their reach, and obtained all the information in respect to their particular profession and art, which it was in their power to acquire. And have they not themselves invariably felt and lamented the want of education? And would not their labors have been more efficient, their improvements greater, their efforts made with superior success, if, to the native energy, and perseverance, and good judgment and skill, for which they have been remarkable, had been added the knowledge and information, which superior early advantages of education would have afforded them? But produce as many of these cases of extraordinary success on the part of uneducated men as can be found, and, on the other hand, of the ill success of merely theoretical men, literary book-farmers, who, without any previous practical knowledge, have undertaken to manage and cultivate a farm solely by information gathered from treatises of agriculture, (and yet I confess I have never known such instances,) yet if these cases of either kind were a thousand times as numerous as they are, would this overthrow the established principle of the universal value of knowledge? and if, in every other art, even the most humble, knowledge is so important, is the source of power, and an essential means of success in the great art of agriculture, involving so many relations to be regarded,

so many operations to be performed, so many materials to operate upon, and so many instruments with which to operate, can we be guilty of the flagrant absurdity of supposing that here science is of no avail? much rather, is it not so obvious to any reasonable mind, as the light of the sun to any clear eye, that knowledge must be valuable and important every where, just in proportion to the greatness of the art to which it is to be applied, and the many subjects of action or use which that act involves?

(To be continued.)

The great objects of life, and the practicability of their attainment by all, are justly and beautifully portrayed in the following extract from *Dr. Channing*, the American Fenelon:

"The true cultivation of a human being consists in the development of great moral ideas; that is, the ideas of good, of duty, of right, of justice, of love, of self-sacrifice; of moral perfection as manifested in Christ, of happiness and immortality, of heaven. The elements or germs of these ideas, belong to every soul, constitute its essence, and are intended for endless expansion. These are the chief distinctions of our nature; they constitute our humanity. To unfold these, is the great work of our being. The light in which these ideas rise in the mind, the love which they awaken, and the force of the will with which they are brought to sway the outward and inward life,—here, and here only, are the measures of human cultivation. These views show us, that the highest culture is within the reach of the poor. It is not knowledge poured on us from abroad, but the development of the elementary principles of the soul itself, which constitutes the true growth of a human being. Undoubtedly, knowledge from abroad is essential to the awakening of these principles. But that, which conduces most to this end, is offered alike to rich and to poor. Society and experience, nature and revelation, our chief moral and religious teachers, and the great quickeners of the soul, do not open their schools to a few favorites, do not initiate a small caste into their mysteries, but are ordained by all to be lights and blessings to all."

INDEX TO VOLUME II.

YOUNG MEN'S DEPARTMENT.

CUTS.